

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD  
 Edition : 14.02.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 464 125  
 Injection pump  
 Pump designation : PES4A80D410/3RS1300  
 EP type number : 0 410 484 015  
 Governor  
 Governor design. : ~~RS~~325...1150A8C494  
<sup>-4L</sup>  
 Governor no. : 0 420 232 572

Customer-spec. information  
 Customer : KHD

Engine : F4L912

1st version kW : 51.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 5.0...5.1

100 s: (4.8...5.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 325.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.5)

Spread cm3 : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 50.0...51.0

1000 : (48.5...52.5)

Spread cm3 : 2.00

1000 : (3.50)

## RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 9.50

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1230...1260  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 8.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 325  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 485...545

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 915  
Rack travel in m: 10.90...11.10  
3rd speed rpm : 500  
Rack travel in m: 11.40...11.50

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1190...1200

Remarks:

:

#### APPLICATION

Installation 2300

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 31.01.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 844 098  
Injection pump  
Pump designation : PES4A95D410RS2809  
EP type number : 0 410 894 993  
Governor  
Governor design. : RQV300...1400AB1065-28L  
Governor no. : 0 420 212 242

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm<sup>3</sup>/ : 6.5...6.6

100 s: (6.3...6.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm<sup>3</sup>/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 65.0...66.0

1000 : (63.0...68.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 111...119

Testing:  
1st rack travel in: 8.90  
Speed rpm : 1450...1460  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1670  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 73...81

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 300  
Rack travel in mm : 8.40...8.60

CONSTANT REGULATION  
Speed rpm : 550...700

TORQUE CONTROL  
Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 9.90...10.00  
2nd speed rpm : 400  
Rack travel in m: 10.70...10.90  
3rd speed rpm : 670  
Rack travel in m: 10.50...10.70  
4th speed rpm : 1060  
Rack travel in m: 10.10...10.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 48.0...51.0  
1000 s: (45.5...53.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.90  
Speed rpm : 1450...1460

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 14.80...15.20

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 9,7 m  
Edition : 21.02.92  
Replaces : 11.73  
Test oil : ISO-4113

Combination no. : 0 400 856 080

Injection pump  
Pump designation : PES6A95D421LS2328  
EP type number : 0 410 896 968  
Governor  
Governor design. : RQ200/1050AB848DR  
Governor no. : 0 420 203 084

Customer-spec. information  
Customer : MAN

Engine : HMXU 036/37/38

1st version kW : 141.3  
Rated speed : 2100  
2nd version kW : 169.3  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm3 : 3.50

1000 : (6.00)

### 2nd version

Speed rpm : 1100

Del.quantity cm3/ : 125.0...128.0

1000 s: (123.0...130.0)

Spread cm3 : 3.50

1000 s: (6.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.30  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1225  
Speed rpm : 0.00...1.00

2nd version

Setting point:

Speed rpm : 600  
Rack travel in mm : 16.0

Testing:

1st rack travel in: 15.80  
Speed rpm : 1110...1130  
2nd rack travel in: 11.60  
Speed rpm : 1135...1165  
3rd rack travel in: 0...10  
Speed rpm : 1180  
4th rack travel in: 1240  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390  
Speed rpm : 350  
Maximum rack travel: 1.00

TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 500  
Rack travel in m: 10.60...10.90  
3rd speed rpm : 800  
Rack travel in m: 10.40...10.70

Torque control curve - 2nd version

1st speed rpm : -  
Rack travel in m: -

FUEL DELIVERY CHARACTERISTICS

1st version

AO6

Speed rpm : 500  
Del.quantity cm3/ : 100.0...103.0  
1000 s: (97.5...105.5)  
Speed rpm : 800  
Del.quantity cm3/ : 107.0...110.0  
1000 s: (104.5...112.5)

2nd version

Speed rpm : 800  
Del.quantity cm3/ : 124.0...129.0  
1000 s: (121.5...131.5)  
Speed rpm : 500  
Del.quantity cm3/ : 0...122.5  
1000 s: (0...125.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1090...1105

2nd version

1mm rack travel less than  
full load rack tr: ?  
Speed rpm : ?

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 14.50...14.90

Speed rpm : 100  
Rack travel in mm : 18.0...21.0

LOW IDLE

Speed rpm : 200  
Rack travel in mm : 6.00

Remarks:

Set low idle at stop screw.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 4,1 b 5  
Edition : 14.02.92  
Replaces : 02.91  
Test oil : ISO-4113

Combination no. : 0 400 864 084

Injection pump  
Pump designation : PES4A90D320/3RS2659  
EP type number : 0 410 894 028  
Governor  
Governor design. : RSV325...1250A0C2182  
-8R

Governer no. : 0 420 233 277

Customer-spec. information  
Customer : MWM

Engine : D226B-4

1st version kW : 74.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 900

Del.quantity : 80.5...82.5

1000 : (78.5...84.5)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 89...97

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1215...1225  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
3rd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1415  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 62...70  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 455...515

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 500  
Rack travel in m: 11.50...11.60  
4th speed rpm : 920  
Rack travel in m: 11.00...11.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.50...11.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 215  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 180  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900

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Speed rpm : 800  
Del.quantity cm3/ : 84.5...86.5  
1000 s: (82.0...89.0)  
Aneroid pressure h: 215  
Speed rpm : 500  
Del.quantity cm3/ : 68.0...70.0  
1000 s: (65.5...72.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 64.0...65.0  
1000 s: (62.0...67.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 8.0...12.0  
1000 s: (6.0...14.0)  
Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:  
: FENDT

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 865 019  
Injection pump  
Pump designation : PES5A80D410/3RS2526  
EP type number : 0 410 885 004  
Governor  
Governor design. : RSV325...1150A8C604-1L  
Governor no. : 0 420 232 573

Customer-spec. information  
Customer : KHD

Engine : F5L912

1st version kW : 62.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 6.5...6.6

100 s: (6.3...6.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 8.6...8.8

Del.quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1130

Del.quantity : 65.0...66.0

1000 : (63.5...67.5)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 11.60

Speed rpm : 1170...1180

2nd rack travel in: 4.00

Speed rpm : 1215...1245

3rd rack travel in: 4.00

Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 65...73

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 400...460

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1130

Rack travel in m: 12.60...12.70

2nd speed rpm : 500

Rack travel in m: 13.30...13.40

4th speed rpm : 910

Rack travel in m: 12.90...13.10

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1170...1180

Remarks:

:

#### APPLICATION

Installation 2300

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 866 093  
Injection pump  
Pump designation : PES6A80D410/3RS2527  
EP type number : 0 410 886 059  
Governor  
Governor design. : RSV325...1150A8C604-  
1L  
Governor no. : 0 420 232 573

Customer-spec. information  
Customer : KHD

Engine : F6L912

1st version kW : 78.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 6.5...6.6

100 s: (6.3...6.7)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 325.0

Rack travel in mm : 8.9...9.1

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.6)

Spread cm3 : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1130

Del.quantity : 65.0...66.0

1000 : (63.5...67.5)

Spread cm3 : 2.00

1000 : (3.50)

## RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 11.60

Speed rpm : 1170...1180

2nd rack travel in: 4.00

Speed rpm : 1215...1245

3rd rack travel in: 4.00

Speed rpm : 1240...1270  
4th rack travel in: 1385  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 8.5  
Speed rpm : 325  
Rack travel in mm : 8.90...9.10  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1130  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 500  
Rack travel in m: 13.30...13.40  
3rd speed rpm : 850  
Rack travel in m: 12.90...13.20

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1170...1180

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Installation 2300



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD  
Edition : 21.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 866 174  
Injection pump  
Pump designation : PES6A85D410/3RS2611  
EP type number : 0 410 886 902  
Governor  
Governor design. : RSV325...1200AOC2148  
-2L  
Governor no. : 0 420 232 570

Customer-spec. information  
Customer : KHD

Engine : F6L913

1st version kW : 81.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
: (2.45...2.65)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 5.8...5.9

100 s: (5.6...6.1)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 0.6...1.2

100 s: (0.4...1.4)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 58.5...59.5

1000 : (56.5...61.5)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 9.40

Speed rpm : 1235...1245

2nd rack travel in: 4.00

Speed rpm : 1295...1325

4th rack travel in: 1460

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 73...81

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.5

#### Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 300

Rack travel in mm : 8.40...8.60

Rack travel in mm : 2.00

Speed rpm : 490...520

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 11.60...11.80

3rd speed rpm : 750

Rack travel in m: 11.60...11.70

4th speed rpm : 975

Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 58.0...60.0  
1000 s: (55.5...62.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1235...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

Rack travel in mm : 17.20...17.60

Remarks:

:

#### APPLICATION

A14

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 866 175  
  
Injection pump  
Pump designation : PES6A90D320/3RS2660  
EP type number : 0 410 896 078  
Governor  
Governor design. : RSV325...1175AOC2247  
-2R  
Governor no. : 0 420 233 290

Customer-spec. information  
Customer : MWM

Engine : TD226-B6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 014  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 8.3...8.4

100 s: (8.1...8.6)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0  
Rack travel in mm : 6.7...6.9  
Del.quantity cm3/ : 1.0...1.6  
100 s: (0.8...1.8)  
Spread cm3 : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1175  
Aneroid pressure h: 700  
Del.quantity : 83.0...84.0  
1000 : (81.0...86.0)  
Spread cm3 : 3.00  
1000 : (5.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93...101

### Testing:

1st rack travel in: 10.10  
Speed rpm : 1215...1225  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
3rd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1430  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 530...590

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.80  
3rd speed rpm : 800  
Rack travel in m: 11.60...11.80  
4th speed rpm : 985  
Rack travel in m: 11.20...11.40

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.60...11.80

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 300  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 250  
Rack travel in m: 11.10...11.30

### FUEL DELIVERY CHARACTERISTICS

### 1st version

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Aneroid pressure h: 700  
Speed rpm : 500  
Del.quantity cm3/ : 80.5...82.5  
1000 s: (78.0...85.0)  
Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm3/ : 85.0...87.0  
1000 s: (82.5...89.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 66.0...67.0  
1000 s: (64.0...69.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1215...1225

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks: : RENAULT

### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 866 176

Injection pump  
Pump designation : PES6A90D320/3RS2660  
EP type number : 0 410 896 078  
Governor  
Governor design. : RSV325...1175AOC2249  
-1R  
Governor no. : 0 420 233 291

Customer-spec. information  
Customer : MWM

Engine : TD226-B6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 9.8...9.9

100 s: (9.6...10.1)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1175

Aneroid pressure h: 700

Del.quantity : 98.0...99.0

1000 : (96.0...101.0)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 93...101

Testing:

1st rack travel in: 11.20  
Speed rpm : 1215...1225  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275  
3rd rack travel in: 4.00  
Speed rpm : 1275...1305  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 500  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 365  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 275  
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 500  
Del.quantity cm3/ : 89.0...91.0  
1000 s: (86.5...93.5)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 66.5...67.5  
1000 s: (64.5...69.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 5,6 a15  
 Edition : 21.02.92  
 Replaces : 10.91  
 Test oil : ISO-4113

Combination no. : 0 400 874 238R

Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 90.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 975

---

Rack travel in mm : 12.20...12.30

---

Del.quantity cm<sup>3</sup>/ : 11.4...11.6  
 100 s: (11.2...11.8)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

---

2nd speed rpm : 415.0  
 Rack travel in mm : 6.6...6.8  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.1  
 100 s: (1.4...2.3)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 975  
 Del.quantity : 114.0...116.0  
 1000 : (112.0...118.0)

---

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 90...98

### Testing:

1st rack travel in: 11.20  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
3rd rack travel in: 4.00  
Speed rpm : 1070...1090  
4th rack travel in: 1230  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 65...73  
Setting point w/out bumper spring  
Speed rpm : 415  
Rack travel in mm : 6.2

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 415  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 535...595

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 500  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 800  
Rack travel in m: 12.70...12.90

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 111.5...114.5  
1000 s: (109.0...117.0)  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 123.0...126.0  
1000 s: (120.5...128.5)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1015...1025

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

### LOW IDLE

Speed rpm : 415  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 o 8  
Edition : 22.01.92  
Replaces : 12.91  
Test oil : ISO-4113

Combination no. : 0 400 876 379

Injection pump  
Pump designation : PES6A95D32ORS2693  
EP type number : 0 410 896 914  
Governor  
Governor design. : RSV300...1300AOC2248  
-3R  
Governor no. : 0 420 233 275

Customer-spec. information  
Customer : DAF

Engine : NT 133

1st version kW : 133.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

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Rack travel in mm : 7.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 104...112

#### Testing:

1st rack travel in: 9.50  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 560...620

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 11.80...11.90  
4th speed rpm : 1070  
Rack travel in m: 11.10...11.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 160  
Rack travel in m: 10.70...10.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 73.0...75.0  
1000 s: (70.5...77.5)  
Aneroid pressure h: -

A22

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 50.5...51.5  
1000 s: (48.5...53.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1340...1350

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 d 6  
Edition : 14.02.92  
Replaces : 06.91  
Test oil : ISO-4113

Combination no. : 0 400 876 383

Injection pump  
Pump designation : PES6A100D410RS2762-1  
EP type number : 0 410 806 008  
Governor  
Governor design. : RSV400...1100A2C2204  
-8L  
Governor no. : 0 420 232 551

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076TDW02

1st version kW : 128.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 190...200

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.9...3.3

100 s: (2.7...3.5)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever  
position degrees: 40...48

Testing:

1st rack travel in: 9.70  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.90...6.11

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 650  
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (132.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400

A24

Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (27.0...35.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

: JOHNE DEERE #RE47356  
Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 d 7  
Edition : 14.02.92  
Replaces : 08.91  
Test oil : ISO-4113

Combination no. : 0 400 876 391

Injection pump  
Pump designation : PES6A100D410RS2762-1  
EP type number : 0 410 806 008  
Governor  
Governor design. : RSV425...1100A2C2225  
-5L  
Governor no. : 0 420 232 566

Customer spec. information  
Customer : JOHN DEERE

Engine : 6076ARW-09

1st version kW : 145.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 2.6...3.0  
100 s: (2.4...3.2)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 900  
Del.quantity : 114.0...116.0  
1000 : (112.0...118.0)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 37...45

#### Testing:

1st rack travel in: 10.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 750  
Rack travel in m: 13.90...14.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 535  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 720  
Rack travel in m: 13.30...13.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 143.5...147.5  
1000 s: (141.5...149.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 129.0...133.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE47502

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : AIF  
Edition : 22.01.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 876 393

Injection pump  
Pump designation : PES6A90D410RS2723  
EP type number : 0 410 896 085  
Governor  
Governor design. : RSV300...1350AOC2257  
-L  
Governor no. : 0 420 232 568

Customer spec. information  
Customer : IVECO-AIFO

Engine : 8061.SRM 25

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 13.60...13.70

Del. quantity cm<sup>3</sup>/ : 10.9...11.0

100 s: (10.7...11.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 9.0...9.2

Del. quantity cm<sup>3</sup>/ : 2.3...2.7

100 s: (2.1...2.9)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1350

Del. quantity : 109.0...110.0

1000 : (107.0...112.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

### 1st version

Control lever

position degrees: 100...108

### Testing:

1st rack travel in: 12.70

Speed rpm : 1390...1400

2nd rack travel in: 4.00

Speed rpm : 1595...1625

4th rack travel in: 1700

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Speed rpm : 300

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 525...585

## TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1350

Rack travel in m: 13.60...13.70

2nd speed rpm : 500

Rack travel in m: 13.60...13.80

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 98.0...100.0

1000 s: (95.5...102.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1390...1400

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 17.20...17.60

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 20,9 z  
Edition : 14.02.92  
Replaces : 04.89  
Test oil : ISO-4113

Combination no. : 0 401 840 108

## Injection pump

Pump designation : PE12P110A520/4LS849  
EP type number : 0 411 810 041  
Governor  
Governor design. : RQV250...1050PA889  
Governor no. : 0 421 813 696

Customer-spec. information  
Customer : MAN

Engine : D2842ME

1st version kW : 305.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 12.8...13.1

100 s: (12.6...13.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.5...2.0  
100 s: (1.2...2.2)

Spread cm3 : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.90...1.30

2nd speed rpm : 800  
travel mm : 5.30...5.70

3rd speed rpm : 1050  
travel mm : 7.50...7.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Del.quantity : 128.5...131.5

1000 : (126.0...134.0)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control Lever  
position degrees: 113...121

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.10  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION  
Speed rpm : 385...510

START CUT-OUT

Speed 1/min : 190 (210)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1090...1100

Remarks:  
: MAN-NR. 2-7905

APPLICATION

Rail car

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 c  
Edition : 31.01.92  
Replaces : 12.91  
Test oil : ISO-4113

Combination no. : 0 401 840 771

Injection pump  
Pump designation : PE12P120A520/4LS3854  
EP type number : 0 411 820 728  
Governor  
Governor design. : RQ950PA664-3  
Governor no. : 0 421 801 629

Customer-spec. information  
Customer : MAN

Engine : D2842LE

1st version kW : 443.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
: (4.15...4.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-

Phasing : 345  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 25.0...25.2

100 s: (24.7...25.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.5...4.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 250.0...252.0

1000 : (247.0...255.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 12.00

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1400

Speed rpm : 0.00...1.00

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1020...1030

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 m  
Edition : 14.02.92  
Replaces : 09.91  
Test oil : ISO-4113

Combination no. : 0 401 846 566

Injection pump  
Pump designation : PE6P110A320RS526  
EP type number : 0 411 816 178  
Governor  
Governor design. : RQ275/1000PA818-3  
Governor no. : 0 421 801 534

Customer-spec. information  
Customer : DAF

Engine : LT 160 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 13.00...14.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 13.0...14.0  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.30

Del.quantity cm<sup>3</sup>/ : 15.6...15.8

100 s: (15.3...16.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm<sup>3</sup>/ : 2.5...3.0

100 s: (2.3...3.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 156.0...158.0

1000 : (153.5...160.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.40

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1090...1120  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 10.70  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 3.00  
Speed rpm : 370...410

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 13.40...13.60  
2nd speed rpm : 600  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 750  
Rack travel in m: 13.90...14.10  
4th speed rpm : 825  
Rack travel in m: 13.60...13.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.20...14.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.70...12.90  
2nd pressure hPa : 290  
Rack travel in m: 13.80...13.90  
3rd pressure hPa : 260  
Rack travel in m: 13.20...13.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 980  
Del.quantity cm<sup>3</sup>/ : 136.0...138.0  
1000 s: (132.0...142.0)  
Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 122.0...124.0  
1000 s: (119.5...126.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1030...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 280.0...320.0  
1000 s: (276.0...324.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Del.quantity cm<sup>3</sup>/ : 25.5...30.5  
1000 s: (23.0...33.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 e  
Edition : 14.02.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 401 846 861

Injection pump  
Pump designation : PE6P120A320RS3176-1  
EP type number : 0 411 826 767  
Governor  
Governor design. : RQV250...1050PA808  
Governor no. : 0 421 813 553

Customer-spec. information  
Customer : ENASA

Engine : 96 R1 AX

1st version kW : 250.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 2.5...3.1

100 s: (2.2...3.4)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 1.90...2.50

3rd speed rpm : 700

travel mm : 4.50...5.10

4th speed rpm : 1095

travel mm : 8.00...8.20

5th speed rpm : 1185

travel mm : 9.00...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 900

Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 76...84

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.20...4.40

CONSTANT REGULATION  
Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.40...12.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.30  
2nd pressure hPa : 520  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 235  
Rack travel in m: 9.80...10.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm3/ : 215.0...221.0  
1000 s: (212.0...224.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...175.0  
1000 s: (151.0...179.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 y  
Edition : 21.02.92  
Replaces : 11.91  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 902  
  
Injection pump  
Pump designation : PE6P110A320RS308G-4  
EP type number : 0 411 816 766  
Governor  
Governor design. : RQV250...1025PA921  
-18  
Governor no. : 0 421 813 801

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD102FL

1st version kW : 239.0  
Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.4...3.6

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.20...2.80

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 1085

travel mm : 7.70...7.90

5th speed rpm : 1170

travel mm : 9.10...9.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 196.0...198.0

1000 : (194.0...200.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 113...121

#### Testing:

1st rack travel in: 12.40  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 59...67

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.00  
Speed rpm : 250  
Rack travel in mm : 3.40...3.60

#### CONSTANT REGULATION

Speed rpm : 250...370

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.40...13.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 90  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 680  
Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 134.5...136.5  
1000 s: (131.5...139.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.40...3.60  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.0...22.0)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 y1  
Edition : 21.02.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 401 846 903

Injection pump  
Pump designation : PE6P110A32JRS3080-5  
EP type number : 0 411 816 767  
Governor  
Governor design. : RQV250...950PA921-19  
Governor no. : 0 421 813 802

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD102FM

1st version kW : 235.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.4...3.6

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.20...2.80

3rd speed rpm : 750

travel mm : 6.30...6.70

4th speed rpm : 995

travel mm : 8.20...8.40

5th speed rpm : 1060

travel mm : 9.30...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 196.0...198.0

1000 : (194.0...200.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

#### Testing:

1st rack travel in: 12.40  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 59...67

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.00  
Speed rpm : 250  
Rack travel in mm : 3.40...3.60

#### CONSTANT REGULATION

Speed rpm : 250...360

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.40...13.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 90  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 680  
Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 134.5...136.5  
1000 s: (131.5...139.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.40...3.60  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.0...22.0)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (7.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 x  
Edition : 24.01.92  
Replaces : 01.91  
Test oil : ISO-4113

Combination no. : 0 401 846 910

Injection pump  
Pump designation : PE6P110A320LS3851  
EP type number : 0 411 816 765  
Governor  
Governor design. : RQ300/1050PA187-26  
Governor no. : 0 421 801 489

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 160.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...8.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

Spread cm<sup>3</sup> : 8.50

1000 : (13.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00  
Rack travel in mm : 2.00  
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 119.0...125.0  
1000 s: (116.5...127.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 w  
Edition : 24.01.92  
Replaces : 01.91  
Test oil : ISO-4113

Combination no. : 0 401 846 918

Injection pump  
Pump designation : PE6P110A320LS3851  
EP type number : 0 411 816 765  
Governor  
Governor design. : RQV300...1050PA884-6  
Governor no. : 0 421 813 832

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 160.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...8.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.50...1.00

2nd speed rpm : 460

travel mm : 2.70...3.20

3rd speed rpm : 738

travel mm : 4.60...5.10

4th speed rpm : 1107

travel mm : 7.90...8.40

5th speed rpm : 1370

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 122.0...124.0  
1000 : (119.5...126.5)  
Spread cm3 : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 83...91

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00

CONSTANT REGULATION  
Speed rpm : 300...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 119.0...125.0  
1000 s: (116.5...127.5)  
Spread cm3 : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAE 12,0 a  
Edition : 22.01.92  
Replaces : 03.91  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 933  
  
Injection pump  
Pump designation : PE6P110A32ORS3260  
EP type number : 0 411 816 775  
Governor  
Governor design. : RQ250/1050PA969  
Governor no. : 0 421 801 538

Customer-spec. information  
Customer : HAEP

Engine : X6130 NA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1035

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 13.0...13.3

100 s: (12.7...13.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del.quantity cm3/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 500

Rack travel in mm : 12.60...14.20

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1035

Del.quantity : 130.0...133.0

1000 : (127.5...135.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 13.4

## Testing:

1st rack travel in: 10.40

Speed rpm : 1085...1100

2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1250

Speed rpm : 0.00...1.80

## LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 7.8

Testing:

Speed rpm : 100  
Minimum rack travel : 9.30  
Speed rpm : 250  
Rack travel in mm : 7.70...7.90  
Rack travel in mm : 2.00  
Speed rpm : 295...335

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1035  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 600  
Rack travel in m: 12.00...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 129.0...134.0  
1000 s: (126.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1085...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.60...8.00  
Del.quantity cm3/ : 15.0...20.0  
1000 s: (12.5...22.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 5,9 b 1  
Edition : 14.02.92  
Replaces : 12.91  
Test oil : ISO-4113

Combination no. : 0 401 846 938

Injection pump  
Pump designation : PE6P110A32ORS3266  
EP type number : 0 412 816 777  
Governor  
Governor design. : RQV300...1300PA996  
-1K  
Governor no. : 0 421 815 278

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD63E

1st version kW : 133.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50  
: (2.30...2.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 780

Rack travel in mm : 10.30...10.40

Del. quantity cm3/ : 10.2...10.4  
100 s: (10.0...10.5)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 330.0  
Rack travel in mm : 5.4...5.6  
Del. quantity cm3/ : 1.7...2.1  
100 s: (1.4...2.4)  
Spread cm3 : 0.7  
100 s: (1.1)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 330  
travel mm : 1.20...1.60  
2nd speed rpm : 500  
travel mm : 2.90...3.50  
3rd speed rpm : 900  
travel mm : 4.70...5.30  
4th speed rpm : 1370  
travel mm : 9.80...10.00  
5th speed rpm : 1450  
travel mm : 11.00...11.40

### GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1470  
Rack travel in mm : 6.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 780

Aneroid pressure h: 1200  
Del.quantity : 102.0...104.0  
1000 : (100.0...106.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 10.20  
Speed rpm : 1360...1370  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1520  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 70...78

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 330  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 330...600

TORQUE CONTROL  
Dimension a mm : 0.90  
Torque control curve - 1st version  
1st speed rpm : 780  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1050  
Rack travel in m: 10.80...11.00  
3rd speed rpm : 1300  
Rack travel in m: 11.20...11.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1300  
Pressure hPa : 1200  
Rack travel mm : 11.20...11.40

Measurement  
Speed 1/min : 1300

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 140  
Rack travel in m: 8.70...8.80

3rd pressure hPa : 650  
Rack travel in m: 10.60...10.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 114.0...118.0  
1000 s: (111.0...121.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 118.0...124.0  
1000 s: (115.0...127.0)  
Aneroid pressure h: --  
Speed rpm : 780  
Del.quantity cm<sup>3</sup>/ : 73.0...75.0  
1000 s: (70.0...78.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1360...1370

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...130.0  
1000 s: (96.0...134.0)  
Rack travel in mm : 10.40...10.90

#### LOW IDLE

Speed rpm : 330  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.0...24.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (11.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 953  
Injection pump  
Pump designation : PE6P110A720RS3225Y  
EP type number : 0 411 816 782  
Governor  
Governor design. : RQ275/1200PA913-1  
Governor no. : 0 421 801 549

Customer-spec. information  
Customer : DAF

Engine : HS 200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 12.9...13.1

100 s: (12.6...13.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del. quantity cm<sup>3</sup>/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 129.0...131.0

1000 : (126.5...133.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.70

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275  
Rack travel in mm : 4.8

Testing:

Speed rpm : 100  
Minimum rack trave: 6.70  
Speed rpm : 275  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 1200  
Rack travel in m: 13.60...13.80

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 360  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 270  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 87.0...89.0  
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 275

B22

Rack travel in mm : 4.70...4.90

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 954  
Injection pump  
Pump designation : PE6P110A72ORS3225Y  
EP type number : 0 411 816 782  
Governor  
Governor design. : RQV275...1200PA910  
Governor no. : 0 421 813 746

Customer-spec. information  
Customer : DAF

Engine : HS 200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 0 681 343 009  
Opening  
pressure, bar : 172...175  
Test lines : 1 680 750 015  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 12.90...13.00

Del. quantity cm<sup>3</sup>/ : 12.9...13.1  
100 s: (12.6...13.3)

Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

2nd speed rpm : 275.0  
Rack travel in mm : 7.2...7.4  
Del. quantity cm<sup>3</sup>/ : 1.4...1.9  
100 s: (1.1...2.1)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40  
2nd speed rpm : 450  
travel mm : 2.90...3.30  
3rd speed rpm : 800  
travel mm : 4.70...5.10  
4th speed rpm : 1200  
travel mm : 7.80...8.00  
5th speed rpm : 1500  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1235  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del. quantity : 129.0...131.0  
1000 : (126.5...133.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version

Control lever  
position degrees: 116...124

Testing:

1st rack travel in: 11.90  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1350...1380  
4th rack travel in: 1450  
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever  
position degrees: 78...86

Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 275  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 280...400

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 360  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 270  
Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.90

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.70...4.90

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI  
 Edition : 31.01.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 963  
 Injection pump  
 Pump designation : PE6P120A720RS3291  
 EP type number : 0 411 826 800  
 Governor  
 Governor design. : RQV300...1000PA1016-8  
 Governor no. : 0 421 813 983  
 Customer-spec. information  
 Customer : IVECO-UNIC  
 Engine : 8210.22.419

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test Lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 11.00...11.10  
 Del. quantity cm<sup>3</sup>/ : 20.6...20.8  
 100 s: (20.3...21.1)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 4.2...4.6  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 8.30...8.50  
 2nd speed rpm : 300  
 travel mm : 1.10...1.50  
 3rd speed rpm : 450  
 travel mm : 2.70...3.30  
 4th speed rpm : 700  
 travel mm : 4.60...5.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 8.70...11.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del. quantity : 206.0...208.0  
 1000 : (203.0...211.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 111...119

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 61...69

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 310...430

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.00...11.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 200  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 215  
Rack travel in m: 10.20...10.40

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 500  
Del.quantity cm3/ : 197.0...203.0  
1000 s: (194.0...206.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1040...1050

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 215.0...235.0  
1000 s: (211.0...239.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.60  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 17,2 c1  
Edition : 24.01.92  
Replaces : 02.89  
Test oil : ISO-4113  
  
Combination no. : 0 401 848 736  
  
Injection pump  
Pump designation : PE8P120A920/5LS3812  
EP type number : 0 411 828 709  
Governor  
Governor design. : RQV300...1200PA357  
Governor no. : 0 421 813 188

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8281.02.001

1st version kW : 257.4  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 8- 4- 3- 6- 5-  
7- 2

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  

---

Rack travel in mm : 9.30...9.40  

---

Del. quantity cm<sup>3</sup>/ : 15.0...15.2  
100 s: (14.7...15.5)  

---

Spread cm<sup>3</sup> : 0.5  

---

100 s: (0.9)  

---

2nd speed rpm : 300.0  
Rack travel in mm : 5.3...5.7  
Del. quantity cm<sup>3</sup>/ : 2.6...3.4  
100 s: (2.3...3.7)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.30...1.70  
2nd speed rpm : 450  
travel mm : 2.70...3.40  
3rd speed rpm : 900  
travel mm : 5.70...6.10  
4th speed rpm : 1200  
travel mm : 8.20...8.40  
5th speed rpm : 1500  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1200  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200

Del.quantity : 150.0...152.0  
1000 : (147.0...155.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 113...121

Testing:  
1st rack travel in: 8.30  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 330...430

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1240...1250

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 k 8  
Edition : 03.03.89  
Replaces : 2.12.88  
Test oil : ISO-4113

Combination no. : 0 401 848 762

Injection pump  
Pump designation : PE8P120A320LS3807-10  
EP type number : 0 411 828 713  
Governor  
Governor design. : RQV300...1150PA545-7  
Governor no. : 0 421 813 595

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 422 A

1st version kW : 243.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 15.9...16.1

100 s: (15.6...16.4)

3spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.40...1.60

2nd speed rpm : 800  
travel mm : 6.00...6.20

3rd speed rpm : 1200  
travel mm : 8.00...8.50

4th speed rpm : 1300  
travel mm : 9.70...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 700  
Del.quantity : 159.0...161.0  
1000 : (156.0...164.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 46...54

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 15...23

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION  
Speed rpm : 300...400

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 700  
Rack travel in m: 11.00...11.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.00...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 450  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 500

CO2

Rack travel in m: 10.50...10.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 173.5...175.5  
1000 s: (170.5...178.5)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 138.0...140.0  
1000 s: (135.0...143.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 12,8 c1  
 Edition : 31.01.92  
 Replaces : 12.91  
 Test oil : ISO-4113

Combination no. : 0 401 848 820

Injection pump  
 Pump designation : PE8P120A720LS3281-1  
 EP type number : 0 411 828 727  
 Governor  
 Governor design. : RQV300...1050PA1009  
 Governor no. : 0 421 813 938

Customer-spec. information  
 Customer : KHD

Engine : BF8L513LC

1st version kW : 243.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 13.00...14.00  
 Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 13.30...13.40

---

Del.quantity cm<sup>3</sup>/ : 18.6...18.8  
 100 s : (18.3...19.1)

---

Spread cm<sup>3</sup> : 0.6

---

100 s : (1.0)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 3.0...3.6  
 100 s : (2.7...3.9)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 2.40...2.80  
 2nd speed rpm : 450  
 travel mm : 3.40...4.00  
 3rd speed rpm : 725  
 travel mm : 5.30...5.90  
 4th speed rpm : 1100  
 travel mm : 9.10...9.30  
 5th speed rpm : 1175  
 travel mm : 10.00...10.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1070  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050

Aneroid pressure h: 850  
Del.quantity : 186.0...188.0  
1000 : (183.0...191.0)  
Spread cm3 : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 119...127

Testing:  
1st rack travel in: 12.30  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 86...94

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 650  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 805  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 850  
Rack travel mm : 13.50...13.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 450  
Rack travel in m: 13.00...13.10

C04

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 850  
Speed rpm : 650  
Del.quantity cm3/ : 186.0...190.0  
1000 s: (183.0...193.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 124.0...126.0  
1000 s: (121.0...129.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...195.0  
1000 s: (-)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 16,0 d6  
 Edition : 22.01.92  
 Replaces : 01.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 849 750  
 Injection pump  
 Pump designation : PE10P110A920/5LS3164  
 EP type number : 0 411 819 708  
 Governor  
 Governor design. : RGV300...1150PA549-5  
 Governor no. : 0 421 813 844

Customer-spec. information  
 Customer : KHD

Engine : BF10L513 ECE

1st version kW : 294.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

C05

Firing order : 1-10- 9- 4- 3- 6- 5-  
 8- 7- 2

Phasing : 0-27-72-99-144-171-  
 216-243-288-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 13.20...13.30  
 Del.quantity cm3/ : 15.3...15.5  
 100 s: (15.0...15.8)  
 Spread cm3 : 0.4  
 100 s: (0.7)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.7...7.9  
 Del.quantity cm3/ : 1.2...1.7  
 100 s: (1.0...2.0)  
 Spread cm3 : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 2.70...3.20  
 3rd speed rpm : 800  
 travel mm : 5.10...5.60  
 4th speed rpm : 1200  
 travel mm : 8.40...8.60  
 5th speed rpm : 1320  
 travel mm : 9.60...10.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1190  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h: 1200  
 Del.quantity : 153.0...155.0  
 1000 : (150.0...158.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION  
Speed rpm : 300...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.40...11.60  
2nd pressure hPa : 660  
Rack travel in m: 12.75...12.85  
3rd pressure hPa : 480  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 117.0...119.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...165.0  
1000 s: (131.0...169.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SAC 10,8 a  
Edition : 21.02.92  
Replaces : 12.91  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 748  
  
Injection pump  
Pump designation : PES6P120A320/3RS3297  
EP type number : 0 412 026 753  
Governor  
Governor design. : RQV375...1000PA1022  
Governor no. : 0 421 813 981

Customer-spec. information  
Customer : SACM

Engine : UD18L6R3D

1st version kW : 219.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000  
  
Rack travel in mm : 11.90...12.00  
  
Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5  
  
100 s: (0.9)

2nd speed rpm : 375.0  
Rack travel in mm : 4.9...5.3  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
travel mm : 8.30...8.50  
2nd speed rpm : 375  
travel mm : 1.70...2.10  
3rd speed rpm : 750  
travel mm : 5.60...6.20  
4th speed rpm : 1350  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 9.90...12.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del.quantity : 209.0...211.0  
1000 : (206.0...214.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 117...125

### Testing:

1st rack travel in: 10.90  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 68...76

### Testing:

Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 375  
Rack travel in mm : 5.00...5.20

## CONSTANT REGULATION

Speed rpm : 370...500

## START CUT-OUT

Speed 1/min : 295 (315)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1040...1050

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 390.0...420.0  
1000 s: (386.0...424.0)  
Rack travel in mm : 19.50...21.00

## LOW IDLE

Speed rpm : 375  
Rack travel in mm : 4.90...5.30  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

## APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 a 6  
 Edition : 14.02.92  
 Replaces : 02.91  
 Test oil : ISO-4113

Combination no. : 0 402 046 313

Injection pump  
 Pump designation : PES6P120A32ORS419  
 EP type number : 0 412 026 037  
 Governor  
 Governor design. : RQV275...1050PA495-8  
 Governor no. : 0 421 813 482

Customer spec. information  
 Customer : RVI

Engine : MIDS062045

1st version kW : 169.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 118

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 17.7...17.9

100 s: (17.4...18.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 2.3...2.7

100 s: (2.0...3.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.20

2nd speed rpm : 450

travel mm : 3.30...3.80

3rd speed rpm : 800

travel mm : 5.70...6.00

4th speed rpm : 1050

travel mm : 7.60...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 177.5...179.5

1000 : (174.5...182.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 62...70

### Testing:

1st rack travel in: 9.30  
Speed rpm : 1125...1135  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 8...16

### Testing:

Speed rpm : 200  
Minimum rack travel: 6.60  
Speed rpm : 275  
Rack travel in mm : 5.20...5.40

## CONSTANT REGULATION

Speed rpm : 275...390

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

## Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.10...8.50  
2nd pressure hPa : 360  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 160  
Rack travel in m: 8.60...8.90

## START CUT-OUT

Speed 1/min : 195 (215)

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Speed rpm : 650  
Del.quantity cm3/ : 179.0...185.0  
1000 s: (176.0...188.0)  
Aneroid pressure h: -

C10

Speed rpm : 500  
Del.quantity cm3/ : 109.5...111.5  
1000 s: (106.5...114.5)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1125...1135

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 151.0...171.0  
1000 s: (147.0...175.0)

## LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 23.5...27.5  
1000 s: (20.5...30.5)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

## APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 s  
Edition : 12.06.90  
Replaces :  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 323  
  
Injection pump  
Pump designation : PES6P120A720LS470  
EP type number : 0 412 026 046  
Governor  
Governor design. : RQ250/1050PA767  
Governor no. : 0 421 801 311

Customer spec. information  
Customer : MAN

Engine : D2866LUE/DSB

1st version kW : 250.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250  
Rack travel in mm : 5.2...5.4  
Del.quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.1)

Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1000  
Del.quantity : 198.0...200.0  
1000 : (195.0...203.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 9.50

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 315...355

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 750  
Rack travel in m: 12.00...12.10  
3rd speed rpm : 865  
Rack travel in m: 11.60...11.80  
4th speed rpm : 985  
Rack travel in m: 9.80...10.10

#### START CUT-OUT

Speed 1/min : 190 (210)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

APPLICATION

Rail car



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 d 5  
 Edition : 21.02.92  
 Replaces : 04.90  
 Test oil : ISO-4113

Combination no. : 0 402 046 328

Injection pump  
 Pump designation : PES6P120A320RS419-2  
 EP type number : 0 412 026 048  
 Governor  
 Governor design. : RQ275/950PA753-1  
 Governor no. : 0 421 801 377

Customer-spec. information  
 Customer : RVI

Engine : MIDS/PS062045 FC

1st version kW : 144.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.70...8.80

Del.quantity cm3/ : 12.0...12.2  
 100 s: (11.7...12.5)

Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 4.8...5.2  
 Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2

Speed rpm : 525  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 500  
 Aneroid pressure h: 700  
 Del.quantity : 120.0...122.0  
 1000 : (117.0...125.0)

Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 525  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 7.20  
 Speed rpm : 1015...1030  
 2nd rack travel in: 4.00

Speed rpm : 1050...1080  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.00  
Speed rpm : 250  
Rack travel in mm : 4.20...4.40  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 8.70...8.80  
2nd speed rpm : 950  
Rack travel in m: 8.00...8.20  
3rd speed rpm : 750  
Rack travel in m: 8.30...8.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 3.70...8.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.00...8.20  
2nd pressure hPa : 240  
Rack travel in m: 8.40...8.50

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 140.0...144.0  
1000 s: (137.0...147.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 107.0...109.0  
1000 s: (104.0...112.0)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.10...4.50

#### Remarks:

Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 d 6  
Edition : 21.02.92  
Replaces : 03.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 329  
  
Injection pump  
Pump designation : PES6P120A320RS419-2  
EP type number : 0 412 026 048  
Governor  
Governor design. : RQ275/950PA843  
Governor no. : 0 421 801 378

## Customer-spec. information

Customer : RVI  
  
Engine : MIDS/PS062045D/A  
  
1st version kW : 129.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8  
  
Test lines : 1 680 750 089  
  
Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000  
  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 500  

---

Rack travel in mm : 8.00...8.10  

---

Del.quantity cm3/ : 10.6...10.8  
100 s: (10.3...11.1)  

---

Spread cm3 : 0.5  
100 s: (0.9)  

---

2nd speed rpm : 275.0  
Rack travel in mm : 3.1...3.3  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 525  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 500  
Del.quantity : 106.0...108.0  
1000 : (103.0...111.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 525  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 6.50  
Speed rpm : 1005...1020  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

Omnibus

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 3.2

#### Testing:

Speed rpm : 200

Minimum rack travel: 5.20

Speed rpm : 275

Rack travel in mm : 3.10...3.30

Rack travel in mm : 2.00

Speed rpm : 300...340

#### TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 500

Rack travel in m: 8.00...8.10

2nd speed rpm : 950

Rack travel in m: 7.30...7.40

3rd speed rpm : 775

Rack travel in m: 7.60...7.80

#### START CUT-OUT

Speed 1/min : 210 (230)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 125.0...129.0

1000 s: (122.0...132.0)

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 145.0...165.0

1000 s: (141.0...169.0)

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 3.10...3.30

Remarks:

:

Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

#### APPLICATION

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 m  
Edition : 31.01.92  
Replaces : 04.91  
Test oil : ISO-4113

Combination no. : 0 402 046 344

Injection pump  
Pump designation : PES6P120A320RS3277  
EP type number : 0 412 026 747  
Governor  
Governor design. : RQV275...1050PA995  
Governor no. : 0 421 813 929

Customer-spec. information  
Customer : RVI

Engine : MIDR 06 20 45

1st version kW : 222.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 9.80...9.90

Del.quantity cm<sup>3</sup>/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.5...5.9

Del.quantity cm<sup>3</sup>/ : 2.1...2.7

100 s: (1.8...3.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1130  
travel mm : 8.20...8.40

2nd speed rpm : 275  
travel mm : 0.70...1.10

3rd speed rpm : 500  
travel mm : 3.50...4.10

4th speed rpm : 750  
travel mm : 5.30...5.70

5th speed rpm : 1450  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1000

Del.quantity : 184.0...186.0

1000 : (181.0...189.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

Testing:  
1st rack travel in: 8.80  
Speed rpm : 1135...1145  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1.50  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 244...252

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 275  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 310...430

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 9.80...9.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.80...8.00  
2nd pressure hPa : 360  
Rack travel in m: 9.20...9.30  
3rd pressure hPa : 200  
Rack travel in m: 8.30...8.50

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050

Del.quantity cm<sup>3</sup>/ : 172.0...178.0  
1000 s: (169.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 109.0...111.0  
1000 s: (106.0...114.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.80  
Speed rpm : 1135...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...155.0  
1000 s: (121.0...159.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.50...5.90  
Del.quantity cm<sup>3</sup>/ : 21.0...27.0  
1000 s: (18.0...30.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 21.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 725A  
  
Injection pump  
Pump designation : PES6P120A820LS3077  
-10  
EP type number : 0 412 026 714  
Governor  
Governor design. : RQ300/1100PA606-2  
Governor no. : 0 421 801 249

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM407A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 153.0...155.0

1000 : (150.0...158.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.40...10.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : 280  
Rack travel in m: 10.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 141.0...144.0  
1000 s: (8175.5...184.5  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 12,0 f1  
Edition : 14.02.92  
Replaces : 06.91  
Test oil : ISO-4113  
Combination no. : 0 402 046 758  
Injection pump  
Pump designation : PES6P120A320RS3139  
EP type number : 0 412 026 718  
Governor  
Governor design. : RQV275...950FA728-1  
Governor no. : 0 421 813 465

Customer-spec. information  
Customer : RVI

Engine : MIDR 063540

1st version kW : 243.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.9...7.3

Del.quantity cm3/ : 2.2...2.6

100 s: (1.9...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.30...1.70

2nd speed rpm : 450  
travel mm : 3.30...3.70

3rd speed rpm : 800  
travel mm : 5.60...6.00

4th speed rpm : 950  
travel mm : 6.70...6.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control Lever

position degrees: 59...67

Testing:

1st rack travel in: 11.50

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1155...1185

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 8...16

Testing:

Speed rpm : 200

Minimum rack travel: 7.10

Speed rpm : 275

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 520

Rack travel in m: 11.80...11.90

3rd pressure hPa : 200

Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 198.0...204.0

1000 s: (195.0...207.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 118.0...120.0

1000 s: (115.0...123.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 155.0...185.0

1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.20...5.60

Del.quantity cm<sup>3</sup>/ : 22.0...26.0

1000 s: (19.0...29.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 e  
Edition : 14.02.92  
Replaces : 04.91  
Test oil : ISO-4113  
Combination no. : 0 402 046 784  
Injection pump  
Pump designation : PES6P120A320RS3139  
EP type number : 0 412 026 718  
Governor  
Governor design. : RGV275...1000PA728-2  
Governor no. : 0 421 813 599

Customer-spec. information  
Customer : RVI

Engine : MIDR 062045 E

1st version kW : 236.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275  
Rack travel in mm : 5.2...5.6  
Del.quantity cm3/ : 2.5...2.9  
100 s: (2.2...3.2)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.90...1.10  
2nd speed rpm : 450  
travel mm : 3.30...3.70  
3rd speed rpm : 800  
travel mm : 5.60...6.00  
4th speed rpm : 1000  
travel mm : 7.00...7.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1170  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 207.0...209.0  
1000 : (204.0...212.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control Lever

position degrees: 115...123

Testing:

1st rack travel in: 10.20

Speed rpm : 1065...1075

2nd rack travel in: 4.00

Speed rpm : 1180...1210

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 64...72

Testing:

Speed rpm : 200

Minimum rack travel: 7.20

Speed rpm : 275

Rack travel in mm : 5.30...5.70

CONSTANT REGULATION

Speed rpm : 230...320

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 320

Rack travel in m: 10.50...10.60

3rd pressure hPa : 160

Rack travel in m: 9.10...9.30

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 219.0...225.0

1000 s: (216.0...228.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 112.0...114.0

1000 s: (109.0...117.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 161.0...181.0

1000 s: (157.0...185.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.20...5.60

Del.quantity cm<sup>3</sup>/ : 25.5...29.5

1000 s: (22.5...32.5)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 12,0 j  
Edition : 28.02.92  
Replaces : 08.91  
Test oil : ISO-4113  
Combination no. : 0 402 046 819  
Injection pump  
Pump designation : PES6P120A320RS3269  
EP type number : 0 412 026 743  
Governor  
Governor design. : RQV275...1000PA983  
Governor no. : 0 421 813 903

Customer-spec. information  
Customer : RVI

Engine : MIDR 06 35 40 L

1st version kW : 283.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 8- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 26.8...27.0

100 s: (26.5...27.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.6

Del.quantity cm3/ : 2.4...2.8  
100 s: (2.1...3.1)

Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1070  
travel mm : 7.70...7.90

2nd speed rpm : 275  
travel mm : 0.70...1.10

3rd speed rpm : 500  
travel mm : 3.50...4.10

4th speed rpm : 750  
travel mm : 5.30...5.70

5th speed rpm : 1450  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1125  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1000  
Del.quantity : 268.0...270.0  
1000 : (265.0...273.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

#### Testing:

1st rack travel in: 12.10  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 247...255

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 275  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.10...13.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.20  
2nd pressure hPa : 440  
Rack travel in m: 12.50...12.70  
3rd pressure hPa : 200  
Rack travel in m: 10.40...10.80

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1000

Del.quantity cm3/ : 241.0...247.0  
1000 s: (238.0...250.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...180.0  
1000 s: (146.0...184.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.50...5.90  
Del.quantity cm3/ : 24.0...28.0  
1000 s: (21.0...31.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 046 835

Injection pump  
Pump designation : PES6P120A320RS3139  
EP type number : 0 412 026 718  
Governor  
Governor design. : RQ750PA1026  
Governor no. : 0 421 801 637

Customer spec. information  
Customer : RVI

Engine : MIDR 062045

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 25.5...25.7

100 s: (25.2...26.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.80...5.00

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del.quantity : 255.0...257.0

1000 : (252.0...260.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

#### Testing:

1st rack travel in: 12.20

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 787...800

4th rack travel in: 900

Speed rpm : 0.00...1.00

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.20

Speed rpm : 750...755

Remarks:

:

APPLICATION

Generator set





# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIN  
Edition : 05.07.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 070 700

Injection pump  
Pump designation : PES12P110A920LS3274  
EP type number : 0 412 010 700  
Governor  
Governor design. : RSUV300...1100POA360  
Governor no. : 0 421 829 109

Customer-spec. information  
Customer : FINCANTIERI

Engine : 12130 IS

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00x1.50x600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
                  : (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 4- 9- 8- 5- 2-  
                  11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-  
                  180-195-240-255-300-  
                  315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 16.8...17.1

100 s: (16.5...17.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.5

Del.quantity cm3/ : 1.6...2.1

100 s: (1.3...2.3)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Del.quantity : 168.0...171.0

1000 : (165.5...173.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Control Lever

position degrees: 56...64

### Testing:

1st rack travel in: 12.30

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1175...1205

4th rack travel in: 1350

Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 7.3

Speed rpm : 300

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00

Speed rpm : 330...370

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 13.30...13.40

2nd speed rpm : 500

Rack travel in m: 13.30...13.50

3rd speed rpm : 350

Rack travel in m: 14.50...15.10

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1140...1150

#### LOW IDLE

Speed rpm : 300

Rack travel in mm : 7.10...7.50

Del.quantity cm3/ : 16.0...21.0

1000 s: (13.5...23.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 13,4 h  
 Edition : 28.02.92  
 Replaces : 23.08.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 704  
 Injection pump  
 Pump designation : PES6P110A420LS3008  
 Governor  
 Governor design. : RSV350...1050PO/386D  
 R

Customer-spec. information  
 Customer : IH

Engine : DTI-817C

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Inlet press., bar : 2.8  
 Test nozzle holder  
 assembly : 1 688 901 003  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,7  
 Test lines : 9 681 230 713  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X1016

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10  
 : (1,95...2,15)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 9,00  
 Del.quantity cm3/ : 10,4...11,8  
 100 s : (-)

2nd speed rpm : 1000  
 Rack travel in mm : 12,00  
 Del.quantity cm3/ : 17,6...18,6  
 100 s : (-)  
 3rd speed rpm : 600  
 Rack travel in mm : 6,00  
 Del.quantity cm3/ : 3,4...4,4  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 800  
 Del.quantity : 196,0...202,0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 39...47

Testing:  
 1st rack travel in: 12,30  
 Speed rpm : 1090...1110  
 2nd rack travel in: 8,00  
 Speed rpm : 1135...1165  
 3rd rack travel in: 1,30...6,40  
 Speed rpm : 1190  
 4th rack travel in: 1240  
 Speed rpm : 1,30...2,00

## LOW IDLE 1

Control lever  
 position degrees: 17...25  
 Setting point w/out bumper spring  
 Speed rpm : 350

Rack travel in mm : 5,50

Testing:

Speed rpm : 100  
Minimum rack travel: 20,00  
Speed rpm : 350  
Rack travel in mm : 5,40...5,60  
Rack travel in mm : 1,65  
Speed rpm : 390..410

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1030  
Rack travel in m: 9,00  
2nd speed rpm : 750  
Rack travel in m: 9,70...9,90  
3rd speed rpm : 450  
Rack travel in m: 9,70...9,90

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 132  
Rack travel mm : \*

Measurement

Speed 1/min : 500

1st pressure hPa : 488  
Rack travel in m: \*\*

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 750  
Del.quantity cm3/ : 230,0...240,0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 158,5...159,5  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11,00  
Speed rpm : 1085...1095

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225,0...295,0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1145  
Rack travel in mm : 4,70...5,70

LOW IDLE

Speed rpm : 350  
Del.quantity cm3/ : 24,0...34,0  
1000 s: (-)

Remarks:

\* Start of LDA (manifold-pressure  
compensator) movement

\*\* Ende der LDA-Bewegung

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 2  
 Edition : 14.02.92  
 Replaces : 11.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 742  
 Injection pump  
 Pump designation : PES6P120A720RS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV400...1050P2A534-  
 7  
 Governor no. : 0 421 833 356

Customer spec. information  
 Customer : JOHN DEERE

Engine : 6076 HZ030

1st version kW : 193.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X3.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 12.20...12.30

Del. quantity cm3/ : 15.5...15.7  
 100 s: (15.3...15.9)

Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.7...6.9  
 Del. quantity cm3/ : 3.9...4.3  
 100 s: (3.6...4.5)  
 Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 900  
 Del. quantity : 155.5...157.5  
 1000 : (153.5...159.5)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
3rd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.70...6.90

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 700  
Rack travel in m: 13.60...13.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 390  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 605  
Rack travel in m: 12.60...13.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 190.0...194.0  
1000 s: (188.0...196.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm3/ : 116.5...120.5  
1000 s: (114.5...122.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 39.0...43.0  
1000 s: (36.5...45.5)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: JOHN DEERE # RE47549

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 3  
Edition : 14.02.92  
Replaces : 12.91  
Test oil : ISO-4113

Combination no. : 0 402 076 743

Injection pump  
Pump designation : PES6P120A72ORS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV425...1100P2A534-  
8  
Governor no. : 0 421 833 370

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076 AN 030

1st version kW : 187.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X3.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 15.0...15.2

100 s: (14.7...15.4)

Spread cm<sup>3</sup> : 0,4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 2.5...3.0

100 s: (2.2...3.1)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 150.0...152.0

1000 : (147.5...154.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:  
1st rack travel in: 10.80  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1230  
3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.50...5.70

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 700  
Rack travel in m: 12.80...13.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.80...13.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 720  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 895  
Rack travel in m: 11.90...12.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 173.5...178.5  
1000 s: (171.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (117.0...127.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1150...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 25.0...30.0  
1000 s: (22.5...31.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: JOHN DEERE # RE47394

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 630 807  
Injection pump  
Pump designation : PE12P120A120RS7253  
EP type number : 0 412 620 831  
Governor  
Governor design. : RQV350...900PA935-1  
Governor no. : 0 421 813 820

Customer-spec. information  
Customer : BAUDOUIN

Engine : 12 P 15-2

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-  
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.40...1.60

2nd speed rpm : 500

travel mm : 3.10...3.70

3rd speed rpm : 740

travel mm : 5.70...6.30

4th speed rpm : 960

travel mm : 8.60...8.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1010

Rack travel in mm : 9.70...12.30

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Del.quantity : 339.0...341.0

1000 : (336.0...344.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 118...126

### Testing:

1st rack travel in: 11.00

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 1070...1040

4th rack travel in: 1150

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 86...94

### Testing:

Speed rpm : 100

Minimum rack travel: 6.30

Speed rpm : 350

Rack travel in mm : 4.70...4.90

## CONSTANT REGULATION

Speed rpm : 330...450

## START CUT-OUT

Speed 1/min : 270 (290)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 940...950

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

## APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21,9 u  
Edition : 20.12.91  
Replaces : 09.86  
Test oil : ISO-4113

Combination no. : 0 402 640 801

Injection pump  
Pump designation : PE12P120A320LS7805  
EP type number : 0 412 620 802  
Governor  
Governor design. : RQV350...1050PA781  
Governor no. : 0 421 813 511

Customer spec. information  
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 463.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...160

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.40...14.50

Del. quantity cm<sup>3</sup>/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.4...5.6  
Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.90...2.40  
2nd speed rpm : 449  
travel mm : 3.00...3.50  
3rd speed rpm : 760  
travel mm : 4.50...5.00  
4th speed rpm : 1107  
travel mm : 7.50...8.00  
5th speed rpm : 1410  
travel mm : 10.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1180  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1030  
Aneroid pressure h: 700  
Del.quantity : 214.0...216.0  
1000 : (211.0...219.0)  
Spread cm3 : 5.00  
1000 : (9.00)

### RATED SPEED

#### 1st version

Control lever  
position degrees: 115...123

#### Testing:

1st rack travel in: 13.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 65...73

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.10  
Speed rpm : 350  
Rack travel in mm : 4.40...4.60

### CONSTANT REGULATION

Speed rpm : 400...600

Aneroid/Altitude  
Compensator Test

### 1st version

#### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.80...12.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : 335  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 485  
Rack travel in m: 13.60...13.80

### START CUT-OUT

Speed 1/min : 270 (290)

### FUEL DELIVERY CHARACTERISTICS

D12

### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 208.0...214.0  
1000 s: (205.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 153.0...155.0  
1000 s: (150.0...158.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1090...1100

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

### APPLICATION

Rail car

Note remarks

Combination no. : 0 402 640 837

Customer-spec. information  
Customer : MERCEDES-BENZ

1st version kW : 485.0  
Rated speed : 2130

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 5.20...5.30
                   : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order      : 12- 1- 5- 7- 8- 3-
                   : 4-11-10- 2- 6- 7
```

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

1st speed      rpm : 1065

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0,9)

```
2nd speed    rpm : 400.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.6...2.2
              100 s: (1.3...2.5)
```

Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## Control-lever position

Degree:  $-1$ 

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

```

1st version
Speed          rpm : 1065
Aneroid pressure h: 1000
Del.quantity   : 211.0...213.0
               1000 : (208.0...216.0)
Spread         cm3 : 5.00
               1000 : (9.00)

```

RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 12.90  
Speed rpm : 1110...1125  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 300  
Minimum rack travel: 7.30  
Speed rpm : 400  
Rack travel in mm : 5.20...5.80  
Rack travel in mm : 2.00  
Speed rpm : 460...500

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : -  
Rack travel mm : 10.90...11.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 500  
Rack travel in m: 12.60...12.80

#### START CUT-OUT

Speed 1/min : 320 (300)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 205.0...209.0  
1000 s: (202.0...212.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 141.0...143.0  
1000 s: (138.0...146.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1110...1125

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.20...5.80  
Del.quantity cm<sup>3</sup>/ : 16.0...22.0  
1000 s: (13.0...25.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

#### APPLICATION

Rail car

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 22.01.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 838

Injection pump  
Pump designation : PE6P120A320LS7808-10  
EP type number : 0 412 626 850  
Governor  
Governor design. : RQ300/1050PA762-4  
Governor no. : 0 421 801 390

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 240.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm<sup>3</sup>/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm<sup>3</sup>/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

### Testing:

1st rack travel in: 13.80  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

### Testing:

Speed rpm : 200  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 5.60...6.20  
Rack travel in mm : 2.00  
Speed rpm : 380...420

### TORQUE CONTROL

Dimension a mm : 0.30  
2nd speed rpm : 1050  
Rack travel in m: 14.80...15.00  
3rd speed rpm : 800  
Rack travel in m: 15.00...15.20

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 550  
Rack travel in m: 12.90...13.10  
3rd pressure hPa : 1050  
Rack travel in m: 14.00...14.10 \*  
4th pressure hPa : 1150  
Rack travel in m: 14.40...14.70  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1450  
Speed rpm : 1050  
Del.quantity cm3/ : 231.0...234.0  
1000 s: (228.0...237.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1450  
Speed rpm : 800  
Del.quantity cm3/ : 237.0...241.0  
1000 s: (234.0...244.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 142.0...144.0  
1000 s: (139.0...147.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 1095...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 g  
Edition : 21.02.92  
Replaces : 08.91  
Test oil : ISO-4113

Combination no. : 0 402 646 915

Injection pump  
Pump designation : PE6P120A320LS7836  
EP type number : 0 412 626 840  
Governor  
Governor design. : RQ300/1050PA972  
Governor no. : 0 421 801 542

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del. quantity cm<sup>3</sup>/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del. quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

### Testing:

1st rack travel in: 12.10  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

### Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.20...5.90  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 12.40...12.60

### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 500  
Rack travel in m: 11.60...11.80  
3rd pressure hPa : 1000  
Rack travel in m: 12.60...12.80  
4th pressure hPa : 1150  
Rack travel in m: 12.90...13.10  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1050  
Del.quantity cm3/ : 201.0...204.0  
1000 s: (198.0...207.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 202.0...206.0  
1000 s: (199.0...209.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1090...1105

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 50.0...70.0  
1000 s: (46.0...74.0)  
Rack travel in mm : 10.20...10.60

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 r  
Edition : 21.02.92  
Replaces : 07.91  
Test oil : ISO-4113

Combination no. : 0 402 646 916

Injection pump  
Pump designation : PE6P120A320LS7836  
EP type number : 0 412 626 854  
Governor  
Governor design. : RQV300...1050PA797  
-17  
Governor no. : 0 421 813 884

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del. quantity cm<sup>3</sup>/ : 18.2...18.4  
100 s: (17.9...18.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.3...5.9  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.50  
2nd speed rpm : 637  
travel mm : 4.90...5.40  
3rd speed rpm : 830  
travel mm : 6.00...6.50  
4th speed rpm : 1107  
travel mm : 8.30...8.80  
5th speed rpm : 1218  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

# 1st version

Speed rpm : 600  
 Aneroid pressure h: 800  
 Del.quantity : 182.0...184.0  
 1000 : (179.0...187.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 118...126

### Testing:

1st rack travel in: 12.40  
 Speed rpm : 1090...1100  
 2nd rack travel in: 4.00  
 Speed rpm : 1195...1225  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
 position degrees: 80...88

### Testing:

Speed rpm : 200  
 Minimum rack travel: 7.60  
 Speed rpm : 300  
 Rack travel in mm : 5.40...5.90

## CONSTANT REGULATION

Speed rpm : 300...500

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
 Speed rpm : 600  
 Pressure hPa : 800  
 Rack travel mm : 12.40...12.60

### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
 Rack travel in m: 10.80...11.00  
 2nd pressure hPa : 500  
 Rack travel in m: 11.60...11.80  
 3rd pressure hPa : 1050  
 Rack travel in m: 12.60...12.80  
 4th pressure hPa : 1150  
 Rack travel in m: 12.90...13.10  
 5th pressure hPa : -  
 Rack travel in m: 10.30...10.60

## START CUT-OUT

Speed 1/min : 240 (260)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1500  
 Speed rpm : 1050  
 Del.quantity cm3/ : 201.0...204.0  
 1000 s: (198.0...207.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: 1500  
 Speed rpm : 800  
 Del.quantity cm3/ : 205.0...209.0  
 1000 s: (202.0...212.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm3/ : 132.0...134.0  
 1000 s: (129.0...137.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.40  
 Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 200.0...220.0  
 1000 s: (196.0...224.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 h  
Edition : 28.02.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 402 646 923

Injection pump  
Pump designation : PE6P130A720RS7225  
EP type number : 0 412 636 817  
Governor  
Governor design. : RQV300...900PA946  
Governor no. : 0 421 813 845

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8210.42.061

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)

Rack travel in mm : 11.50...12.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 27.0...27.3

100 s: (26.6...27.6)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.8

Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 945  
travel mm : 8.40...8.60

2nd speed rpm : 300  
travel mm : 1.00...1.40

3rd speed rpm : 500  
travel mm : 3.30...3.90

4th speed rpm : 700  
travel mm : 5.50...5.90

5th speed rpm : 1200  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 935

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 270.0...273.0

1000 : (266.5...276.5)

Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.60  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1015...1045  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 75...83

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.10  
Speed rpm : 300  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 320...440

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 350  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 300  
Rack travel in m: 10.90...11.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 285.0...292.0  
1000 s: (281.5...295.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 202.0...205.0  
1000 s: (198.5...208.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...155.0  
1000 s: (121.0...159.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.40...4.80  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 p  
Edition : 21.02.92  
Replaces : 05.91  
Test oil : ISO-4113

Combination no. : 0 402 646 924

Injection pump  
Pump designation : PE6P120A320LS7837  
EP type number : 0 412 626 842  
Governor  
Governor design. : RQ300/950PA971-3  
Governor no. : 0 421 801 557

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. l/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm<sup>3</sup>/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 233.0...235.0  
1000 : (230.0...238.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.50  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.6

Testing:

Speed rpm : 200  
Minimum rack travel: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.30...6.90  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 950  
Rack travel in m: 15.50...15.70  
3rd speed rpm : 800  
Rack travel in m: 15.60...15.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 600  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 1250  
Rack travel in m: 14.80...15.00 \*  
4th pressure hPa : 1450  
Rack travel in m: 15.40...15.60  
5th pressure hPa : -  
Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800  
Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 251.0...254.0  
1000 s: (248.0...257.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1800  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 135.0...137.0  
1000 s: (132.0...140.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.50  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 9.30...9.50

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,1 b  
Edition : 21.02.92  
Replaces : 03.91  
Test oil : ISO-4113

Combination no. : 0 402 646 925

Injection pump  
Pump designation : PE6P120A320LS7837  
EP type number : 0 412 626 842  
Governor  
Governor design. : RQV300...950PA797-20  
Governor no. : 0 421 813 893

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del. quantity cm<sup>3</sup>/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.50

2nd speed rpm : 567  
travel mm : 4.40...4.90

3rd speed rpm : 780  
travel mm : 6.10...6.60

4th speed rpm : 1009  
travel mm : 8.30...8.80

5th speed rpm : 1190  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1025

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1000  
Del.quantity : 233.0...235.0  
1000 : (230.0...238.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

Testing:  
1st rack travel in: 14.50  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.60...6.20

CONSTANT REGULATION  
Speed rpm : 300...450

TORQUE CONTROL  
Dimension a mm : 0.10  
2nd speed rpm : 950  
Rack travel in m: 15.50...15.70  
3rd speed rpm : 800  
Rack travel in m: 15.60...15.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 600  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 1250

Rack travel in m: 14.80...15.00 \*  
4th pressure hPa : 1450  
Rack travel in m: 15.40...15.60  
5th pressure hPa : -  
Rack travel in m: 9.30...9.50

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1700  
Speed rpm : 950  
Del.quantity cm3/ : 251.0...254.0  
1000 s: (248.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1700  
Speed rpm : 800  
Del.quantity cm3/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 135.0...137.0  
1000 s: (132.0...140.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.50  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:  
:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 o 4  
Edition : 21.02.92  
Replaces : 04.91  
Test oil : ISO-4113

Combination no. : 0 402 646 930

Injection pump  
Pump designation : PE6P120A320LS7834  
EP type number : 0 412 626 841  
Governor  
Governor design. : RQ300/1050PA972-7  
Governor no. : 0 421 801 583

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
(5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...7.1

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 13.90  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.8

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.70  
Speed rpm : 300  
Rack travel in mm : 6.50...7.10  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.35  
2nd speed rpm : 1050  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 800  
Rack travel in m: 15.30...15.50

#### Aneroid/Altitude

##### Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1100  
Rack travel mm : 14.70...14.90

##### Measurement

Speed 1/min : 600

1st pressure hPa : 250  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 700  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 1400  
Rack travel in m: 14.80...15.00 \*  
4th pressure hPa : 1550  
Rack travel in m: 15.10...15.30  
5th pressure hPa : -  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1800  
Speed rpm : 1050

Del.quantity cm<sup>3</sup>/ : 234.0...237.0  
1000 s: (231.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1800  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 1090...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 40.0...70.0  
1000 s: (36.0...74.0)  
Rack travel in mm : 10.40...10.70

#### Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 n  
Edition : 21.02.92  
Replaces : 09.91  
Test oil : ISO-4113  
Combination no. : 0 402 646 936  
Injection pump  
Pump designation : PE6P120A320RS7230  
EP type number : 0 412 626 843  
Governor  
Governor design. : RQV250...1000PA990K  
Governor no. : 0 421 815 274

Customer-spec. information  
Customer : DAF

Engine : WS 315 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 13.80...14.80

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 26.4...26.6

100 s: (26.1...26.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.30...1.70

2nd speed rpm : 285

travel mm : 2.10...2.50

3rd speed rpm : 685

travel mm : 6.20...6.60

4th speed rpm : 1030

travel mm : 9.60...10.00

5th speed rpm : 1145

travel mm : 11.20...11.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 12.90...15.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 264.0...266.0

1000 : (261.0...269.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 13.20  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1275  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 310...350

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 600  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 750  
Rack travel in m: 13.30...13.50  
4th speed rpm : 825  
Rack travel in m: 13.80...14.00  
5th speed rpm : 980  
Rack travel in m: 14.80...15.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 980  
Pressure hPa : 1500  
Rack travel mm : 14.20...14.30

Measurement  
Speed 1/min : 980

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 630  
Rack travel in m: 11.80...11.90

3rd pressure hPa : 340  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 500  
Del.quantity cm3/ : 288.0...292.0  
1000 s: (285.0...295.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 162.0...164.0  
1000 s: (159.0...167.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 1030...1040

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.10...5.30

Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 q 1  
Edition : 28.02.92  
Replaces : 07.91  
Test oil : ISO-4113

Combination no. : 0 402 646 940

Injection pump  
Pump designation : PE6P120A320LS7836  
EP type number : 0 412 626 840  
Governor  
Governor design. : RQ300/950PA971-7  
Governor no. : 0 421 801 580

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm<sup>3</sup>/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 12.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:

Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.30...5.90  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 500  
Rack travel in m: 11.60...11.80  
3rd pressure hPa : 1000  
Rack travel in m: 12.60...12.80  
4th pressure hPa : 1150  
Rack travel in m: 12.90...13.10  
5th pressure hPa : -  
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 950  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 202.0...206.0  
1000 s: (199.0...209.0)

Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 45.0...75.0  
1000 s: (41.0...79.0)  
Rack travel in mm : 10.30...10.60

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 n1  
 Edition : 14.02.92  
 Replaces : 11.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 949  
 Injection pump  
 Pump designation : PE6P120A320RS7230Z  
 EP type number : 0 412 626 848  
 Governor  
 Governor design. : RQV250...1000PA990K  
 Governor no. : 0 421 815 274

Customer-spec. information  
 Customer : DAF

Engine : WS 295 G

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 13.20...14.20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.30...1.70

2nd speed rpm : 285

travel mm : 2.10...2.50

3rd speed rpm : 1030

travel mm : 9.60...10.00

4th speed rpm : 1145

travel mm : 11.20...11.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 12.70  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1275  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control Lever  
position degrees: 67...75

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL  
Dimension a mm : 1.80  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 550  
Rack travel in m: 12.20...12.40  
3rd speed rpm : 725  
Rack travel in m: 12.60...12.80  
4th speed rpm : 850  
Rack travel in m: 13.20...13.40  
5th speed rpm : 980  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 980  
Pressure hPa : 1500  
Rack travel mm : 13.70...13.80

Measurement  
Speed 1/min : 980

1st pressure hPa : -  
Rack travel in m: 8.10...8.30  
2nd pressure hPa : 380  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 150  
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 500  
Del.quantity cm3/ : 263.0...267.0  
1000 s: (260.0...270.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.10...5.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 968  
  
Injection pump  
Pump designation : PE6P120A320RS7248  
EP type number : 0 412 626 861  
Governor  
Governor design. : RQV275...1150PA986  
Governor no. : 0 421 813 920

Customer-spec. information  
Customer : DAF

Engine : RS 222 L

1st version kW : 222.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 11.70...12.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 11.7...12.7  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 18.4...18.6  
100 s: (18.1...18.9)

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 5.3...5.5  
Del. quantity cm<sup>3</sup>/ : 1.3...1.9  
100 s: (1.0...2.2)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.20...1.60  
2nd speed rpm : 315  
travel mm : 1.80...2.20  
3rd speed rpm : 1205  
travel mm : 8.10...8.50  
4th speed rpm : 1340  
travel mm : 9.70...9.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1315  
Rack travel in mm : 10.90...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 184.0...186.0  
1000 : (181.0...189.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1180...1190  
2nd rack travel in: 4.00  
Speed rpm : 1320...1350  
4th rack travel in: 1450  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 315...365

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.20...12.30

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 420  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 240  
Rack travel in m: 10.30...10.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 120.0...122.0  
1000 s: (117.0...125.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1180...1190

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 969

Injection pump  
Pump designation : PE6P120A320RS7248Z  
EP type number : 0 412 626 862  
Governor  
Governor design. : RQV275...1150PA986  
Governor no. : 0 421 813 920

Customer-spec. information  
Customer : DAF

Engine : RS 200 L

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Lube oil : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 11.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 10.8...11.8  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 5.3...5.5  
Del.quantity cm3/ : 1.3...1.9  
100 s: (1.0...2.2)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.20...1.60  
2nd speed rpm : 315  
travel mm : 1.80...2.20  
3rd speed rpm : 1205  
travel mm : 8.10...8.50  
4th speed rpm : 1340  
travel mm : 9.70...9.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1335  
Rack travel in mm : 9.00...11.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 164.0...166.0  
1000 : (161.0...169.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1450  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 315...365

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 340  
Rack travel in m: 10.70...10.80  
3rd pressure hPa : 200  
Rack travel in m: 9.60...9.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 115.0...117.0  
1000 s: (112.0...120.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1190...1200

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 970  
Injection pump  
Pump designation : PE6P120A320RS7248Y  
EP type number : 0 412 626 863  
Governor  
Governor design. : RQV275...1150PA986  
Governor no. : 0 421 813 920

Customer-spec. information  
Customer : DAF

Engine : RS 180 L

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 419 992 198  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 105  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8  
Test lines : 1 680 750 089  
Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 10.00...11.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 10.2...11.2  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 10.70...10.80  
Del. quantity cm<sup>3</sup>/ : 14.5...14.7  
100 s: (14.2...15.0)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)  
2nd speed rpm : 275.0  
Rack travel in mm : 5.3...5.5  
Del. quantity cm<sup>3</sup>/ : 1.3...1.9  
100 s: (1.0...2.2)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.20...1.60  
2nd speed rpm : 315  
travel mm : 1.80...2.20  
3rd speed rpm : 1205  
travel mm : 8.10...8.50  
4th speed rpm : 1340  
travel mm : 9.70...9.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1330  
Rack travel in mm : 9.40...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000

Del.quantity : 145.5...147.5  
1000 : (142.5...150.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1180...1190  
2nd rack travel in: 4.00  
Speed rpm : 1295...1325  
4th rack travel in: 1450  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 315...365

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 10.70...10.80

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 250  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 140  
Rack travel in m: 9.40...9.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 107.0...109.0  
1000 s: (104.0...112.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1180...1190

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80

Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 971  
Injection pump  
Pump designation : PE6P120A320RS7218Z  
EP type number : 0 412 626 847  
Governor  
Governor design. : RQV250...1000PA939-2  
Governor no. : 0 421 813 986

Customer-spec. information  
Customer : DAF

Engine : WS 242 L

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 419 992 198  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 105  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 13.30...14.30

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 13.5...14.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850  
Rack travel in mm : 13.80...13.90  
Del. quantity cm<sup>3</sup>/ : 20.5...20.7  
100 s: (20.2...21.0)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)  
2nd speed rpm : 275.0  
Rack travel in mm : 6.3...6.5  
Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
travel mm : 7.70...8.20  
2nd speed rpm : 275  
travel mm : 1.10...1.60  
3rd speed rpm : 380  
travel mm : 2.40...2.90  
4th speed rpm : 675  
travel mm : 4.20...4.70  
5th speed rpm : 1310  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1075  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 205.0...207.0  
1000 : (202.0...210.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 12.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 300...350

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.80...13.90

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 420  
Rack travel in m: 13.30...13.40  
3rd pressure hPa : 260  
Rack travel in m: 12.20...12.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm3/ : 147.0...149.0  
1000 s: (144.0...152.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1040...1050

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 972  
Injection pump  
Pump designation : PE6P120A320RS7218  
EP type number : 0 412 626 839  
Governor  
Governor design. : RQV250...1000PA939-2  
Governor no. : 0 421 813 986

Customer-spec. information  
Customer : DAF

Engine : WS 268 L

1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 14.30...15.30  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 6.3...6.5  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
travel mm : 7.70...8.20  
2nd speed rpm : 275  
travel mm : 1.10...1.60  
3rd speed rpm : 380  
travel mm : 2.40...2.90  
4th speed rpm : 675  
travel mm : 4.20...4.70  
5th speed rpm : 1310  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1075  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 230.0...232.0  
1000 : (227.0...235.0)  
Spread cm3 : 5.00  
1000 : (9.00)

### RATED SPEED

#### 1st version

Control lever  
position degrees: 116...124

#### Testing:

1st rack travel in: 13.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

### LOW IDLE 1

Control lever  
position degrees: 78...86

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10

### CONSTANT REGULATION

Speed rpm : 300...350

### Aneroid/Altitude Compensator Test

### 1st version

#### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.80...14.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 490  
Rack travel in m: 14.20...14.30  
3rd pressure hPa : 280  
Rack travel in m: 12.80...13.00

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm3/ : 158.0...160.0  
1000 s: (155.0...163.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 1040...1050

### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.90...5.10

#### Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 973  
Injection pump  
Pump designation : PE6P120A320RS7218Z  
EP type number : 0 412 626 847  
Governor  
Governor design. : RQ250/1000PA936-2  
Governor no. : 0 421 801 633

Customer-spec. information  
Customer : DAF

Engine : WS 242 L  
1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 419 992 198  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 105  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 13.30...14.30  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 13.5...14.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850  
Rack travel in mm : 13.80...13.90  
Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 6.3...6.5  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550  
Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 205.0...207.0  
1000 : (202.0...210.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550  
Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.80  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.00

Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 14.80...14.90  
2nd speed rpm : 1000  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 420  
Rack travel in m: 13.30...13.40  
3rd pressure hPa : 260  
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 147.0...149.0  
1000 s: (144.0...152.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 974  
Injection pump  
Pump designation : PE6P120A320RS7218  
EP type number : 0 412 626 839  
Governor  
Governor design. : RQ250/1000PA936-2  
Governor no. : 0 421 801 633

Customer-spec. information  
Customer : DAF

Engine : WS 268 L

1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 14.50...15.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 550  
Rack travel in mm : 16.0

Testing:  
1st rack travel in: 13.80  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 330...370

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in mm: 15.30...15.40  
2nd speed rpm : 1000  
Rack travel in mm: 15.20...15.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.80...14.90

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in mm: 12.20...12.40  
2nd pressure hPa : 490  
Rack travel in mm: 14.20...14.30  
3rd pressure hPa : 280  
Rack travel in mm: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 158.0...160.0  
1000 s: (155.0...163.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 1035...1050

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.90...5.10

Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 21.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 987  
  
Injection pump  
Pump designation : PE6P120A32ORS7218Y  
EP type number : 0 412 626 859  
Governor  
Governor design. : RQ250/1000PA936-2  
Governor no. : 0 421 801 633

Customer-spec. information  
Customer : DAF

Engine : WS 222 L

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 105  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8  
  
Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 13.30...14.30

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 13.5...14.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850  

---

Rack travel in mm : 13.70...13.80  

---

Del. quantity cm<sup>3</sup>/ : 19.5...19.7  

---

100 s: (19.2...20.0)  

---

Spread cm<sup>3</sup> : 0.5  

---

100 s: (0.9)  

---

2nd speed rpm : 275.0  
Rack travel in mm : 6.3...6.5  
Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 550  
Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del. quantity : 195.0...197.0  
1000 : (192.0...200.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 550  
Rack travel in mm : 16.0

### Testing:

1st rack travel in: 12.70  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.0

### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 330...370

### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 1000  
Rack travel in m: 14.60...14.80

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.70...13.80

### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 400  
Rack travel in m: 13.20...13.30  
3rd pressure hPa : 230  
Rack travel in m: 12.00...12.20

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 139.0...141.0  
1000 s: (136.0...144.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1035...1050

### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 21.02.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 988

Injection pump  
Pump designation : PE6P120A32ORS7230X  
EP type number : 0 412 626 868  
Governor  
Governor design. : RQV250...1000PA990K  
Governor no. : 0 421 815 274

Customer spec. information  
Customer : DAF

Engine : WS 295 L

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 13.50...14.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 25.8...26.0

100 s: (25.5...26.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.30...1.70

2nd speed rpm : 285  
travel mm : 2.10...2.50

3rd speed rpm : 685  
travel mm : 6.20...6.60

4th speed rpm : 1030  
travel mm : 9.60...10.00

5th speed rpm : 1145  
travel mm : 11.20...11.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1195

Rack travel in mm : 11.60...14.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 258.0...260.0

1000 : (255.0...263.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 66...74

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1275  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 2.20  
Torque control curve - 1st version  
1st speed rpm : 400  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 825  
Rack travel in m: 13.30...13.50  
4th speed rpm : 980  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 980  
Pressure hPa : 1500  
Rack travel mm : 13.90...14.00

Measurement  
Speed 1/min : 980

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 830

E24

Rack travel in m: 12.60...12.70  
3rd pressure hPa : 420  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 600  
Del.quantity cm3/ : 255.0...259.0  
1000 s: (252.0...262.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure n: -  
Speed rpm : 600  
Del.quantity cm3/ : 159.0...161.0  
1000 s: (156.0...164.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1030...1040

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
 Edition : 21.02.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 989  
 Injection pump  
 Pump designation : PE6P120A32ORS7230Y  
 EP type number : 0 412 626 867  
 Governor  
 Governor design. : RGV250...1000PA990K  
 Governor no. : 0 421 815 274

Customer-spec. information  
 Customer : DAF

Engine : WS 315 L

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 980  
 Rack travel in mm : 14.50...14.60  
 Del.quantity cm<sup>3</sup>/ : 27.3...27.5  
 100 s: (27.0...27.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.8...6.0  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.30...1.70  
 2nd speed rpm : 285  
 travel mm : 2.10...2.50  
 3rd speed rpm : 685  
 travel mm : 6.20...6.60  
 4th speed rpm : 1030  
 travel mm : 9.60...10.00  
 5th speed rpm : 1145  
 travel mm : 11.20...11.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1190  
 Rack travel in mm : 12.20...14.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Aneroid pressure h: 1500  
 Del.quantity : 273.0...275.0  
 1000 : (270.0...278.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 66...74

Testing:  
1st rack travel in: 13.50  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1275  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL  
Dimension a mm : 2.20  
Torque control curve - 1st version  
1st speed rpm : 400  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 600  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 800  
Rack travel in m: 14.00...14.20  
4th speed rpm : 980  
Rack travel in m: 14.80...15.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 980  
Pressure hPa : 1500  
Rack travel mm : 14.50...14.60

Measurement  
Speed 1/min : 980

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 760  
Rack travel in m: 13.10...13.20  
3rd pressure hPa : 350  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 281.0...285.0  
1000 s: (278.0...288.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 168.0...170.0  
1000 s: (165.0...173.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 1030...1040

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.10...5.30

#### Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,8 o 2  
Edition : 14.02.92  
Replaces : 08.91  
Test oil : ISO-4113

Combination no. : 0 402 648 895

Injection pump  
Pump designation : PE8P120A320LS7835  
EP type number : 0 412 628 847  
Governor  
Governor design. : RQ300/1050PA972-1  
Governor no. : 0 421 801 545

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
                  : (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.40

Del. quantity cm3/ : 22.5...22.7  
100 s: (22.2...23.0)

Spread cm3 : 0.6  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 6.2...6.8  
Del. quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1000  
Del. quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50  
2nd speed rpm : 1050  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 800  
Rack travel in m: 14.60...14.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 10.80...11.10  
2nd pressure hPa : 650  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1200  
Rack travel in m: 14.30...14.40 \*

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 1050  
Del.quantity cm3/ : 214.0...217.0  
1000 s: (211.0...220.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm3/ : 232.0...236.0  
1000 s: (229.0...239.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 30.0...70.0  
1000 s: (26.0...74.0)  
Rack travel in mm : 10.10...10.50

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 670 809

Injection pump  
Pump designation : PE12P120A320LS7807-2  
EP type number : 0 412 620 812  
Governor  
Governor design. : RSV375...950POA535-5  
Governor no. : 0 421 833 374

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 493.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del.quantity cm3/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 375.0  
Rack travel in mm : 5.4...5.9  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)

Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 800  
Del.quantity : 220.0...222.0  
1000 : (217.0...225.0)  
Spread cm3 : 6.00  
1000 : (10.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 23...31

Testing:

1st rack travel in: 13.80  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1200  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack travel: 13.00  
Speed rpm : 375  
Rack travel in mm : 6.20...6.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 14.80...15.00  
2nd speed rpm : 800  
Rack travel in m: 15.70...15.90  
3rd speed rpm : 925  
Rack travel in m: 15.10...15.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.30...11.50  
2nd pressure hPa : 500  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 1000  
Rack travel in m: 15.40...15.60  
4th pressure hPa : -  
Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

F02

1st version

Aneroid pressure h: 1250  
Speed rpm : 1030  
Del.quantity cm3/ : 225.0...228.0  
1000 s: (222.0...231.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 800  
Del.quantity cm3/ : 241.0...245.0  
1000 s: (238.0...248.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 122.0...124.0  
1000 s: (119.0...127.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel Less than

full load rack tr: 13.80  
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.40...5.90  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

On activation of the starting solenoid,  
the start position must be reached.

Observe VDT-I-420/120

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 735 804  
Injection pump  
Pump designation : PES5P120A720/3LS7250  
EP type number : 0 412 725 809  
Governor  
Governor design. : RQV325...1000PA962-5  
K  
Governor no. : 0 421 815 300

Customer-spec. information  
Customer : MAN

Engine : D2865LF03/LU03  
1st version kW : 235.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 419 992 198  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 105  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 089  
Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

F03

Prestroke mm : 4.80...4.90  
(4.75...4.95)  
Rack travel in mm : 15.00...16.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 5

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60  
& maximum rack tra: 15.0...16.0  
Difference ° CS : 1.75...3.25

## BASIC SETTING

1st speed rpm : 650  
Rack travel in mm : 12.70...12.80  
Del.quantity cm3/ : 26.6...26.8  
100 s: (26.3...27.1)  
Spread cm3 : 0.6  
100 s: (-)  
2nd speed rpm : 325.0  
Rack travel in mm : 5.9...6.3  
Del.quantity cm3/ : 4.7...5.3  
100 s: (4.4...5.6)  
Spread cm3 : 1.0  
100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050  
travel mm : 8.70...8.90  
2nd speed rpm : 325  
travel mm : 1.90...2.10  
3rd speed rpm : 520  
travel mm : 4.20...4.60  
4th speed rpm : 900  
travel mm : 5.90...6.30  
5th speed rpm : 1350  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1140

Rack travel in mm : 10.60...13.20

#### FULL LOAD DELIV. AT FULL LOAD STOP

##### 1st version

Speed rpm : 650  
Aneroid pressure h: 1200  
Del.quantity : 266.0...268.0  
1000 : (263.0...271.0)  
Spread cm<sup>3</sup> : 6.00

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 285...293

##### Testing:

1st rack travel in: 11.90  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 240...248

##### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 325  
Rack travel in mm : 6.00...6.20

#### CONSTANT REGULATION

Speed rpm : 340...450

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 900  
Rack travel in m: 13.30...13.50  
3rd speed rpm : 1000  
Rack travel in m: 12.90...13.10

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.50

#### Measurement

Speed 1/min : 900

F04

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 170  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 600  
Rack travel in m: 11.90...12.10

#### START CUT-OUT

Speed 1/min : 245 (265)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 261.0...265.0  
1000 s: (258.0...268.0)  
Aneroid pressure h: 1200  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 242.0...248.0  
1000 s: (239.0...251.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 159.0...161.0  
1000 s: (156.0...164.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.90...6.30  
Del.quantity cm<sup>3</sup>/ : 47.0...53.0  
1000 s: (44.0...56.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

#### Remarks:

: MAN-NR. 3-7200

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 735 805  
Injection pump  
Pump designation : PES5P120A720/3LS7250  
EP type number : 0 412 725 809  
Governor  
Governor design. : RQV325...1000PA962-6  
K  
Governor no. : 0 421 815 301

Customer-spec. information  
Customer : MAN

Engine : D2865LF06/LUC6

1st version kW : 235.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
(4.75...4.95)  
Rack travel in mm : 15.00...16.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60  
& maximum rack tra: 15.0...16.0  
Difference ° CS : 1.75...3.25

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del. quantity cm3/ : 26.0...26.2

100 s: (25.7...26.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.9...6.3

Del. quantity cm3/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050  
travel mm : 8.70...8.90

2nd speed rpm : 325  
travel mm : 1.90...2.10

3rd speed rpm : 520  
travel mm : 4.10...4.70

4th speed rpm : 810  
travel mm : 5.80...6.20

5th speed rpm : 1350  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 10.80...13.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900  
Aneroid pressure h : 1200  
Del.quantity : 260.0...262.0  
1000 : (257.0...265.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 285...293

Testing:

1st rack travel in: 12.10  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 240...248

Testing:

Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 325  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 1000  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 650  
Rack travel in m: 12.70...12.90  
4th speed rpm : 400  
Rack travel in m: 11.90...12.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

F07

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 170

Rack travel in m: 9.60...9.70

3rd pressure hPa : 600

Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 248.0...254.0  
1000 s: (245.0...257.0)  
Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 270.0...276.0  
1000 s: (267.0...279.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 159.0...161.0  
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.90...6.30  
Del.quantity cm<sup>3</sup>/ : 47.0...53.0  
1000 s: (44.0...56.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

Remarks:

: MAN-NR. 3-7202

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 5,9 w 2  
Edition : 14.02.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 402 736 811

Injection pump  
Pump designation : PES6P110A12ORS7213  
EP type number : 0 412 716 804  
Governor  
Governor design. : RQV400...1250PA964-3  
K  
Governor no. : 0 421 815 255

Customer-spec. information  
Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 147.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm<sup>3</sup>/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 1.60...1.80

2nd speed rpm : 600

travel mm : 2.80...3.30

3rd speed rpm : 1300

travel mm : 7.20...7.40

4th speed rpm : 1500

travel mm : 8.90...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del.quantity : 158.5...160.5

1000 : (155.5...163.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 13.80

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1460...1490

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed rpm : 275

Minimum rack travel: 7.20

Speed rpm : 400

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90

2nd speed rpm : 800

Rack travel in m: 13.20...13.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1250

Pressure hPa : 1200

Rack travel mm : 14.80...14.90

Measurement

Speed 1/min : 1250

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 410

Rack travel in m: 10.00...10.10

3rd pressure hPa : 755

Rack travel in m: 13.20...13.60

START CUT-OUT

Speed 1/min : 290 (300)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 156.5...162.5

1000 s: (153.5...165.5)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 90.0...94.0

1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 11.90...12.90

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.50...5.70

Del.quantity cm<sup>3</sup>/ : 32.0...38.0

1000 s: (30.0...40.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

: C.D.C. # 3918321

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 6  
 Edition : 14.02.92  
 Replaces : 11.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 812  
 Injection pump  
 Pump designation : PES6P110A120RS7214  
 EP type number : 0 412 716 805  
 Governor  
 Governor design. : RQV350...1200PA964-4  
 K  
 Governor no. : 0 421 815 256

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 156.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
 Rack travel in mm : 12.30...12.40  
 Del.quantity cm3/ : 14.7...14.9  
 100 s: (14.4...15.2)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.4...5.6  
 Del.quantity cm3/ : 2.7...3.3  
 100 s: (2.5...3.5)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.80...2.00  
 2nd speed rpm : 450  
 travel mm : 3.10...3.50  
 3rd speed rpm : 700  
 travel mm : 5.90...6.30  
 4th speed rpm : 1200  
 travel mm : 9.00...9.20  
 5th speed rpm : 1400  
 travel mm : 10.70...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 1200  
 Del.quantity : 147.5...149.5  
 1000 : (144.5...152.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1375...1405  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 650  
Rack travel in m: 10.90...11.30  
3rd speed rpm : 550  
Rack travel in m: 10.80...11.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.50...7.90  
2nd pressure hPa : 225  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 575  
Rack travel in m: 11.20...11.60

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 151.0...157.0  
1000 s: (148.0...160.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 86.5...90.5  
1000 s: (84.5...92.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 10.70...11.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
: C.D.C. # 3917088

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 1  
Edition : 14.02.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 402 736 814

Injection pump  
Pump designation : PES6P110A12ORS/214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1200PA964-6  
K  
Governor no. : 0 421 815 258

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
Rack travel in mm : 14.50...14.60  
Del.quantity cm<sup>3</sup>/ : 18.3...18.5  
100 s: (18.0...18.8)

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.4...5.6  
Del.quantity cm<sup>3</sup>/ : 2.7...3.3  
100 s: (2.5...3.5)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.80...2.00  
2nd speed rpm : 450  
travel mm : 3.10...3.50  
3rd speed rpm : 700  
travel mm : 5.90...6.30  
4th speed rpm : 1200  
travel mm : 9.00...9.20  
5th speed rpm : 1400  
travel mm : 10.70...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 1200  
Del.quantity : 183.0...185.0  
1000 : (180.0...188.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 13.50  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1405...1435  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 650  
Rack travel in m: 11.40...11.80

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

#### Measurement

Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.50...7.90  
2nd pressure hPa : 320  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 860  
Rack travel in m: 13.10...13.50

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 165.5...171.5  
1000 s: (162.5...174.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 86.5...90.5  
1000 s: (84.5...92.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 10.70...11.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: C.D.C. # 3917089

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 736 824  
  
Injection pump  
Pump designation : PES6P120A720/3LS7251  
EP type number : 0 412 726 860  
Governor  
Governor design. : RQV300...1000PA962  
-7K  
Governor no. : 0 421 815 302

Customer-spec. information  
Customer : MAN

Engine : D2866LF06  
  
1st version kW : 309.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 105  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089  
  
Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
: (4.75...4.95)  
Rack travel in mm : 15.00...16.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60  
& maximum rack tra: 15.0...16.0  
Difference ° CS : 1.75...3.25

## BASIC SETTING

1st speed rpm : 900  
  
Rack travel in mm : 13.50...13.60  
  
Del.quantity cm3/ : 28.5...28.7  
100 s: (28.2...29.0)  
  
Spread cm3 : 0.5  
100 s: (0.9)  
  
2nd speed rpm : 300.0  
Rack travel in mm : 5.2...5.6  
Del.quantity cm3/ : 2.9...3.5  
100 s: (2.6...3.8)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050  
travel mm : 9.10...9.30  
2nd speed rpm : 300  
travel mm : 3.70...3.90  
3rd speed rpm : 450  
travel mm : 4.20...4.60  
4th speed rpm : 770  
travel mm : 5.80...6.20  
5th speed rpm : 1350  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1120

Rack travel in mm : 10.80...13.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900  
Aneroid pressure h: 1200  
Del.quantity : 285.0...287.0  
1000 : (282.0...290.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 287...295

Testing:

1st rack travel in: 12.10  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 243...251

Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 240...360

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 900  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 1000  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 750  
Rack travel in m: 12.70...12.90  
4th speed rpm : 400  
Rack travel in m: 11.50...11.70

Aneroid/Altitude

Compensator Test

1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 220

Rack travel in m: 9.40...9.50

3rd pressure hPa : 720

Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1000  
Del.quantity cm3/ : 261.0...265.0  
1000 s: (258.0...268.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 271.0...277.0  
1000 s: (268.0...280.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 166.0...168.0  
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.60  
Del.quantity cm3/ : 29.0...35.0  
1000 s: (26.0...38.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 736 825  
Injection pump  
Pump designation : PES6P120A720/3LS7251  
EP type number : 0 412 726 860  
Governor  
Governor design. : RQV300...1000PA962-8  
K  
Governor no. : 0 421 815 303

Customer-spec. information  
Customer : MAN

Engine : D2866LFD9

1st version kW : 309.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
: (4.75...4.95)  
Rack travel in mm : 15.00...16.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60  
& maximum rack tra: 15.0...16.0  
Difference ° CS : 1.75...3.25

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 29.9...30.1

100 s: (29.6...30.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.2...5.6  
Del. quantity cm<sup>3</sup>/ : 2.9...3.5  
100 s: (2.6...3.8)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050  
travel mm : 9.10...9.30  
2nd speed rpm : 300  
travel mm : 3.60...4.00  
3rd speed rpm : 450  
travel mm : 4.10...4.70  
4th speed rpm : 770  
travel mm : 5.80...6.20  
5th speed rpm : 1350  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1120



Rack travel in mm : 11.10...13.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900  
Aneroid pressure h : 1200  
Del.quantity : 299.0...301.0  
1000 : (296.0...304.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 287...295

Testing:

1st rack travel in: 12.40  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 243...251

Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 240...360

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1000  
Rack travel in m: 13.40...13.60  
3rd speed rpm : 750  
Rack travel in m: 12.90...13.10  
4th speed rpm : 400  
Rack travel in m: 12.00...12.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.90...14.00

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 9.00...9.20

2nd pressure hPa : 220

Rack travel in m: 9.40...9.50

3rd pressure hPa : 720

Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 271.0...277.0  
1000 s: (268.0...280.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 281.0...287.0  
1000 s: (278.0...290.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 168.0...170.0  
1000 s: (165.0...173.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.60  
Del.quantity cm<sup>3</sup>/ : 29.0...35.0  
1000 s: (26.0...38.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7206

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 736 826  
Injection pump  
Pump designation : PES6P120A720/3LS7251  
EP type number : 0 412 726 860  
Governor  
Governor design. : RQV300...1000PA962  
-9K  
Governor no. : 0 421 815 304

Customer-spec. information  
Customer : MAN

Engine : D2866LU04

1st version kW : 309.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
(4.75...4.95)  
Rack travel in mm : 15.00...16.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10  
& maximum rack tra: 15.0...16.0  
Difference ° CS : 1.75...0.00

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 29.1...29.3

100 s: (28.8...29.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/ : 2.9...3.5

100 s: (2.6...3.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050  
travel mm : 9.10...9.30

2nd speed rpm : 300  
travel mm : 3.70...3.90

3rd speed rpm : 450  
travel mm : 4.20...4.60

4th speed rpm : 770  
travel mm : 5.80...6.20

5th speed rpm : 1350  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750  
Aneroid pressure h: 1200  
Del.quantity : 291.0...293.0  
1000 : (288.0...296.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 287...295

Testing:

1st rack travel in: 12.00  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 243...251

Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 240...360

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 900  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 1000  
Rack travel in m: 13.00...13.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.20

Measurement

F21

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 200

Rack travel in m: 8.70...8.80

3rd pressure hPa : 660

Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1000  
Aneroid pressure h: 1200  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 290.0...296.0  
1000 s: (287.0...299.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 169.0...171.0  
1000 s: (166.0...174.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm<sup>3</sup>/ : 29.0...35.0  
1000 s: (26.0...38.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7208

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 12,2 b  
Edition : 21.02.92  
Replaces : 07.91  
Test oil : ISO-4113

Combination no. : 0 402 746 809

Injection pump  
Pump designation : PES6P120A720RS7132  
EP type number : 412 726 806  
Governor  
Governor design. : RQ750PA836  
Governor no. : 0 421 801 373

Customer-spec. information  
Customer : PERKINS

Engine : EAGLE LE

1st version kW : 240.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
                  : (4.45...4.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.90...16.00

Del.quantity cm<sup>3</sup>/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 3.8...4.4

100 s: (3.5...4.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 339.0...341.0

1000 : (336.0...344.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 14.90

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 783...798

4th rack travel in: 820

Speed rpm : 0.00...1.00

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.90

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 210.0...240.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 12,2 d  
Edition : 14.02.92  
Replaces : 07.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 835  
  
Injection pump  
Pump designation : PES6P120A320RS7156  
EP type number : 0 412 726 813  
Governor  
Governor design. : RQV250...1050PA793-2  
Governor no. : 0 421 813 699

Customer-spec. information  
Customer : PERKINS

Engine : EAGLE TX 350/375

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.20...14.30

Del. quantity cm<sup>3</sup>/ : 27.7...27.9

100 s: (27.4...28.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.30

2nd speed rpm : 350

travel mm : 2.90...3.50

3rd speed rpm : 700

travel mm : 4.00...4.60

4th speed rpm : 1000

travel mm : 7.40...7.60

5th speed rpm : 1100

travel mm : 8.80...9.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 277.0...279.0  
1000 : (274.0...282.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 13.20  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 81...89

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...570

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 14.20...14.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in mm: 12.10...12.30  
2nd pressure hPa : 850  
Rack travel in mm: 13.80...13.90  
3rd pressure hPa : 610  
Rack travel in mm: 12.60...12.80

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version

F25

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 222.0...224.0  
1000 s: (219.0...227.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...230.0  
1000 s: (187.0...233.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 15,9 b3  
Edition : 14.02.92  
Replaces : 07.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 880  
  
Injection pump  
Pump designation : PES6P120A32ORS7105  
EP type number : 0 412 726 800  
Governor  
Governor design. : RQV350...900PA935-1  
Governor no. : 0 421 813 820

Customer-spec. information  
Customer : BAUDOUIN

Engine : 6P15-2

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed	rpm	: 900
Rack travel in mm		: 12.00...12.10
Del.quantity cm3/		: 33.9...34.1
	100 s:	(33.6...34.4)
Spread	cm3	: 0.5
	100 s:	(0.9)
2nd speed	rpm	: 350.0
Rack travel in mm		: 4.5...4.9
Del.quantity cm3/		: 1.7...2.3
	100 s:	(1.4...2.6)
Spread	cm3	: 0.8
	100 s:	(1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 0.70...1.00
2nd speed	rpm	: 500
travel mm		: 3.10...3.80
3rd speed	rpm	: 800
travel mm		: 6.50...6.90
4th speed	rpm	: 900
travel mm		: 7.80...8.10

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1010  
Rack travel in mm : 9.70...12.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del.quantity : 339.0...341.0  
: (336.0...344.0)  
1000 : (336.0...344.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.00  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1000...1030  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 80...88

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.20  
Speed rpm : 350  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 940...950

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 s 2  
Edition : 14.02.92  
Replaces : 06.91  
Test oil : ISO-4113

Combination no. : 0 402 746 906

Injection pump  
Pump designation : PES6P120A720LS7196  
EP type number : 0 412 726 831  
Governor  
Governor design. : RQV450...1050PA985  
Governor no. : 0 421 813 917

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 h LA

1st version kW : 304.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
                  : (4.95...5.15)  
Rack travel in mm : 19.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.20...15.40

Del.quantity cm3/ : 28.4...28.6  
100 s: (28.1...28.9)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 450.0  
Rack travel in mm : 4.0...4.6  
Del.quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 450  
travel mm : 1.10...1.60  
2nd speed rpm : 650  
travel mm : 3.50...4.00  
3rd speed rpm : 940  
travel mm : 5.50...6.00  
4th speed rpm : 1107  
travel mm : 7.30...7.80  
5th speed rpm : 1226  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

# 1st version

Speed rpm : 600  
Aneroid pressure h: 950  
Del.quantity : 284.0...286.0  
1000 : (281.0...289.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 113...121

### Testing:

1st rack travel in: 14.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 61...69

### Testing:

Speed rpm : 300  
Minimum rack trave: 5.90  
Speed rpm : 450  
Rack travel in mm : 4.00...4.60

## CONSTANT REGULATION

Speed rpm : 450...600

## TORQUE CONTROL

Dimension a mm : 0.60  
2nd speed rpm : 1050  
Rack travel in m: 15.40...15.60  
3rd speed rpm : 900  
Rack travel in m: 15.70...15.90  
4th speed rpm : 800  
Rack travel in m: 16.00...16.20

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 950  
Rack travel mm : 15.2...15.4

## Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.3...11.5  
2nd pressure hPa : 600

G01

Rack travel in m: 13.6...13.8  
3rd pressure hPa : 1200  
Rack travel in m: 15.5...15.8  
4th pressure hPa : -  
Rack travel in m: 9.8...10.2

## START CUT-OUT

Speed 1/min : 370 (390)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm3/ : 280.0...283.0  
1000 s: (277.0...286.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 298.0...302.0  
1000 s: (295.0...305.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 14.40  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 280.0...300.0  
1000 s: (276.0...304.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 u  
Edition : 21.02.92  
Replaces : 06.91  
Test oil : ISO-4113

Combination no. : 0 402 746 913

Injection pump  
Pump designation : PES6P120A720LS7237  
EP type number : 0 412 726 851  
Governor  
Governor design. : RQ300/1100PA1008-1  
Governor no. : 0 421 801 592

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600  
Rack travel in mm : 12.00...12.20  
Del.quantity cm3/ : 16.1...16.3  
100 s: (15.8...16.6)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 6.5...7.1  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 500  
Del.quantity : 161.0...163.0  
1000 : (158.0...166.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

### Testing:

1st rack travel in: 12.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

### Testing:

Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 500  
Rack travel mm : 12.00...12.20

### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 700  
Rack travel in m: 12.10...12.30 \*  
3rd pressure hPa : 1100  
Rack travel in m: 12.80...13.00  
4th pressure hPa : -  
Rack travel in m: 11.70...12.00

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm3/ : 193.0...196.0  
1000 s: (190.0...199.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1145...1160

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 60.0...80.0  
1000 s: (56.0...84.0)  
Rack travel in mm : 11.70...12.10

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 u 1  
Edition : 21.02.92  
Replaces : 07.91  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 916  
  
Injection pump  
Pump designation : PES6P120A720LS7237  
EP type number : 0 412 726 851  
Governor  
Governor design. : RQ300/1100PA1010  
Governor no. : 0 421 801 596

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del.quantity cm3/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.4

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 500

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.40  
Rack travel in mm : 2.00  
Speed rpm : 390...430

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 500  
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 700  
Rack travel in m: 12.10...12.30  
3rd pressure hPa : 1100  
Rack travel in m: 12.80...13.00  
4th pressure hPa : -  
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm3/ : 193.0...196.0  
1000 s: (190.0...199.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 800

Del.quantity cm3/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 t 2  
Edition : 14.02.92  
Replaces : 07.91  
Test oil : ISO-4113

Combination no. : 0 402 746 918

Injection pump  
Pump designation : PES6P120A720LS7238  
EP type number : 0 412 726 852  
Governor  
Governor design. : RQ300/1100PA1013  
Governor no. : 0 421 801 599

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 hLA

1st version kW : 220.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm<sup>3</sup>/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

### Testing:

1st rack travel in: 13.60  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

### Testing:

Speed rpm : 200  
Minimum rack travel: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.00...6.60  
Rack travel in mm : 2.00  
Speed rpm : 380...420

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 600  
Rack travel mm : 14.00...14.20

### Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 400  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 800  
Rack travel in m: 14.20...14.40  
4th pressure hPa : -  
Rack travel in m: 11.50...11.80

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm3/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 700

Del.quantity cm3/ : 233.0...237.0  
1000 s: (230.0...240.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)  
Spread cm3 : -  
1000 s: (12.0)

### BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 13.60  
Speed rpm : 1145...1160

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 15,9 d  
Edition : 14.02.92  
Replaces : 09.91  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 920  
  
Injection pump  
Pump designation : PES6P120A32ORS7241  
EP type number : 0 412 726 854  
Governor  
Governor design. : RQV350...900PA935-1  
Governor no. : 0 421 813 820

Customer-spec. information  
Customer : BAUDOUIN

Engine : 6P15 2E

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8  
  
Test lines : 1 680 750 075  
  
Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 3.60...3.70  
                  : (3.55...3.75)  
Rack travel in mm : 9.00...12.00

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Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
Rack travel in mm : 12.00...12.10  
Del.quantity cm<sup>3</sup>/ : 33.9...34.1  
100 s : (33.6...34.4)  
  
Spread cm<sup>3</sup> : 0.5  
100 s : (0.9)  
  
2nd speed rpm : 350.0  
Rack travel in mm : 4.7...5.1  
Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s : (1.4...2.6)  
  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 945  
travel mm : 8.40...8.60  
2nd speed rpm : 350  
travel mm : 1.30...1.70  
3rd speed rpm : 550  
travel mm : 3.60...4.20  
4th speed rpm : 750  
travel mm : 5.90...6.30  
5th speed rpm : 1200  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1010  
Rack travel in mm : 9.70...12.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del.quantity : 339.0...341.0  
1000 : (336.0...344.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 119...127

Testing:

1st rack travel in: 11.00

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 1000...1030

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 83...91

Testing:

Speed rpm : 100

Minimum rack travel: 6.40

Speed rpm : 350

Rack travel in mm : 4.80...5.00

Rack travel in mm : 2.00

CONSTANT REGULATION

Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 940...950

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 u 3  
 Edition : 21.02.92  
 Replaces : 09.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 923  
 Injection pump  
 Pump designation : PES6P120A720LS7237  
 EP type number : 0 412 726 851  
 Governor  
 Governor design. : RG300/1100PA1013-2  
 Governor no. : 0 421 801 611

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del.quantity cm<sup>3</sup>/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 500

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.60...6.20  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 500  
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 700  
Rack travel in m: 12.10...12.30  
3rd pressure hPa : 1100  
Rack travel in m: 12.80...13.00  
4th pressure hPa : -  
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm3/ : 193.0...196.0  
1000 s: (190.0...199.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 800

Del.quantity cm3/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI  
Edition : 21.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 926  
  
Injection pump  
Pump designation : PES6P120A720RS7224  
EP type number : 0 412 726 840  
Governor  
Governor design. : RQ275/1050PA1021  
Governor no. : 0 421 801 623

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8460.41.721

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20  
: (5.05...5.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.2

Del.quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.80

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 335...375

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 550  
Rack travel in m: 10.80...11.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 850  
Pressure hPa : 900  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 850

1st pressure hPa : -  
Rack travel in m: 7.30...7.50  
2nd pressure hPa : 430  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 250  
Rack travel in m: 8.20...8.40

#### START CUT-OUT

Speed 1/min : 215 (235)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 550  
Del.quantity cm3/ : 218.0...224.0  
1000 s: (215.0...227.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 126.0...128.0  
1000 s: (123.0...131.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...160.0  
1000 s: (126.0...154.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.80...5.20  
Del.quantity cm3/ : 20.0...26.0  
1000 s: (17.0...29.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI  
Edition : 21.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 927  
  
Injection pump  
Pump designation : PES6P120A720RS7224  
EP type number : 0 412 726 840  
Governor  
Governor design. : RQ275/1050PA1021-1  
Governor no. : 0 421 801 624

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8460.41.731

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20  
                  : (5.05...5.25)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 222.0...224.0

1000 : (219.0...227.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 335...375

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 550  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 850  
Pressure hPa : 1200  
Rack travel mm : 12.70...12.80

#### Measurement

Speed 1/min : 850

1st pressure hPa : -  
Rack travel in m: 7.50...7.70  
2nd pressure hPa : 580  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 290  
Rack travel in m: 8.60...9.00

#### START CUT-OUT

Speed 1/min : 215 (235)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 550  
Del.quantity cm3/ : 266.0...274.0  
1000 s: (263.0...277.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 126.0...128.0  
1000 s: (123.0...131.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...160.0  
1000 s: (126.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.80...5.20  
Del.quantity cm3/ : 20.0...26.0  
1000 s: (17.0...29.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC  
 Edition : 14.02.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 930  
 Injection pump  
 Pump designation : PES6P120A720RS7157  
 EP type number : 0 412 726 814  
 Governor  
 Governor design. : RQV325...900PA909-5K  
 Governor no. : 0 421 815 305

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EN7-390

1st version kW : 291.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.70...15.80

Del.quantity cm3/ : 27.1...27.3

100 s: (26.8...27.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 2.80...3.20

3rd speed rpm : 650  
 travel mm : 5.60...5.80

4th speed rpm : 900  
 travel mm : 8.30...8.50

5th speed rpm : 1100  
 travel mm : 10.30...10.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 271.5...273.5

1000 : (268.5...276.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 14.70  
Speed rpm : 940...970  
2nd rack travel in: 4.00  
Speed rpm : 1130...1140  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 15.70...15.80  
2nd speed rpm : 625  
Rack travel in m: 15.10...15.50  
3rd speed rpm : 500  
Rack travel in m: 0.00...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 15.70...15.80

Measurement  
Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 8.50...8.90  
2nd pressure hPa : 325  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 790  
Rack travel in m: 13.80...14.20

## START CUT-OUT

Speed 1/min : 275 (285)

G17

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm<sup>3</sup>/ : 300.0...306.0  
1000 s: (297.0...309.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 159.0...161.0 \*  
1000 s: (136.5...157.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 157.5...161.5  
1000 s: (155.5...163.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.70  
Speed rpm : 940...970

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 10.80...11.40

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.10...5.30  
Del.quantity cm<sup>3</sup>/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P34

Bow dimension:  
Sliding-sleeve position = 37.0 mm  
\* This test specification applies only  
to the engine/nozzle-and-holder  
assemblies on an injection-pump test  
bench: setting for test equipment,  
check value for engine equipment.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 746 931

Injection pump  
Pump designation : PES6P120A320RS7236  
EP type number : 0 412 726 848  
Governor  
Governor design. : RGV275...1000PA1001-  
2  
Governor no. : 0 421 813 989

Customer-spec. information  
Customer : RVI

Engine : MIDR 063540 N/3

1st version kW : 283.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 18.00...21.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.2...13.3

Del.quantity cm<sup>3</sup>/ : 28.2...28.4

100 s: (27.9...28.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 2.7...3.1

100 s: (2.4...3.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1080

travel mm : 8.40...8.60

2nd speed rpm : 275

travel mm : 1.20...1.40

3rd speed rpm : 490

travel mm : 3.50...4.10

4th speed rpm : 775

travel mm : 5.90...6.30

5th speed rpm : 1450

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1165

Rack travel in mm : 11.90...13.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 282.0...284.0  
1000 : (279.0...287.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 297...305

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 243...251

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.10  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 480  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 240  
Rack travel in m: 10.10...10.50

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

G19

Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm3/ : 260.0...266.0  
1000 s: (257.0...269.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 166.0...168.0  
1000 s: (163.0...171.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...175.0  
1000 s: (141.0...179.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 27.0...31.0  
1000 s: (24.0...34.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 n  
Edition : 14.02.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 402 776 808

Injection pump  
Pump designation : PES6P120A720RS7223  
EP type number : 0 412 726 843  
Governor  
Governor design. : RSV400...1050POA547  
Governor no. : 0 421 833 349

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 HZ010

1st version kW : 241.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 075

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 103

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X3.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
(3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 22.4...22.6  
100 s: (22.1...22.9)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 400.0  
Rack travel in mm : 6.0...6.2  
Del.quantity cm3/ : 2.1...2.7  
100 s: (1.9...2.9)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1200  
Del.quantity : 224.5...226.5  
1000 : (221.5...229.5)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 850  
Rack travel in m: 13.20...13.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 290  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 620  
Rack travel in m: 12.50...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 850

Del.quantity cm<sup>3</sup>/ : 238.0...244.0  
1000 s: (235.0...247.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 145.0...149.0  
1000 s: (143.0...151.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 21.5...27.5  
1000 s: (19.5...29.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Adjustment without torque-control E47014  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 7,1 f  
Edition : 14.02.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 402 846 050

Injection pump  
Pump designation : PE6P110A320RS8009  
EP type number : 0 412 816 010  
Governor  
Governor design. : RQV250...1200PA953K  
Governor no. : 0 421 815 996

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD73EB

1st version kW : 187.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 064

Inlet press., bar : 2.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
                  : (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.8)

Spread cm3 : 0.7

100 s: (1.1)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.50

2nd speed rpm : 400

travel mm : 3.00...3.60

3rd speed rpm : 850

travel mm : 6.70...7.30

4th speed rpm : 1250

travel mm : 10.30...10.50

5th speed rpm : 1350

travel mm : 11.40...11.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1240

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 196.0...198.0  
1000 : (194.0...200.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1350...1380  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 69...77

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION  
Speed rpm : 300...450

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 1200  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 850  
Rack travel in m: 12.20...12.50  
4th speed rpm : 350  
Rack travel in m: 10.60...10.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 12.30...12.50

Measurement  
Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.30...7.50  
2nd pressure hPa : 90

Rack travel in m: 7.50...7.60  
3rd pressure hPa : 870  
Rack travel in m: 11.70...11.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1200  
Del.quantity cm3/ : 165.0...169.0  
1000 s: (162.0...172.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 99.0...101.0  
1000 s: (96.0...104.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1260...1270

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 7,1 f 1  
Edition : 14.02.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 402 846 051

Injection pump  
Pump designation : PE6P110A32GRS8009  
EP type number : 0 412 816 010  
Governor  
Governor design. : RGV250...1200PA953  
-1K  
Governor no. : 0 421 815 995

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD73EA

1st version kW : 160.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 064

Inlet press., bar : 2.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 15.9...16.1  
100 s: (15.7...16.3)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.7...5.1  
Del.quantity cm3/ : 2.1...2.5  
100 s: (1.8...2.8)  
Spread cm3 : 0.7  
100 s: (1.1)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.50  
2nd speed rpm : 400  
travel mm : 3.00...3.60  
3rd speed rpm : 850  
travel mm : 6.70...7.30  
4th speed rpm : 1250  
travel mm : 10.30...10.50  
5th speed rpm : 1350  
travel mm : 11.40...11.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1240  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700

Aneroid pressure h: 1200  
Del. quantity : 159.0...161.0  
1000 : (157.0...163.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1330...1360  
4th rack travel in: 14.50  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 69...77

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 300...450

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 1200  
Rack travel in m: 11.10...11.30  
3rd speed rpm : 1100  
Rack travel in m: 11.00...11.30  
4th speed rpm : 350  
Rack travel in m: 9.40...9.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 11.10...11.30

Measurement  
Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.30...7.50

G25

2nd pressure hPa : 90  
Rack travel in m: 7.50...7.60  
3rd pressure hPa : 670  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1200  
Del. quantity cm3/ : 146.0...150.0  
1000 s: (143.0...153.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm3/ : 99.0...101.0  
1000 s: (96.0...104.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1260...1270

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90

Remarks: :

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB6,11  
 Edition : 21.02.92  
 Replaces : 12.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 246 031  
 Injection pump  
 Pump designation : PES6MW100/720RS1515  
 EP type number : 0 413 206 013  
 Governor  
 Governor design. : RQV300...1300MW125-1  
 Governor no. : 0 420 083 258

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 127.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
 x Wall thickness : 8.00X2.50X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm: 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 11.30

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1440...1470

4th rack travel in: 1550

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.3

Testing:  
Speed rpm : 200  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.20...4.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.70...9.80

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 500  
Rack travel in m: 12.00...12.20  
3rd pressure hPa : 1000  
Rack travel in m: 12.40...12.50

#### START CUT-OUT

Speed 1/min : 180 (200)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 103.5...106.5  
1000 s: (101.0...109.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 43.0...45.0  
1000 s: (41.0...47.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...125.0  
1000 s: (112.0...128.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.40  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 I 1  
Edition : 28.02.92  
Replaces : 12.91  
Test oil : ISO-4113  
Combination no. : 0 403 246 032  
Injection pump  
Pump designation : PES6MW100/720RS1515  
EP type number : 0 413 206 013  
Governor  
Governor design. : RGV300...1300MW125-2  
Governor no. : 0 420 083 259

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 142.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30  
: (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1100

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 11.30

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1420...1450

4th rack travel in: 1550

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.3

Testing:  
Speed rpm : 200  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.20...4.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.90...9.00

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 500  
Rack travel in m: 11.90...12.10  
3rd pressure hPa : 1100  
Rack travel in m: 12.30...12.40

#### START CUT-OUT

Speed 1/min : 180 (200)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 750  
Del.quantity cm3/ : 103.5...106.5  
1000 s: (101.0...109.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 41.0...43.0  
1000 s: (39.0...45.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...125.0  
1000 s: (112.0...128.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.40  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 246 033  
Injection pump  
Pump designation : PES6MW100/72ORS1511  
EP type number : 0 413 206 011  
Governor  
Governor design. : RQV300...1300MW125  
Governor no. : 0 420 083 257

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 156.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30  
: (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1100

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 11.60

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1440...1470

4th rack travel in: 1550

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

Testing:  
Speed rpm : 200  
Minimum rack trave: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 7.10...7.20

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 500  
Rack travel in m: 10.10...10.30  
3rd pressure hPa : 1100  
Rack travel in m: 12.60...12.70

#### START CUT-OUT

Speed 1/min : 180 (200)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 750  
Del.quantity cm3/ : 111.5...114.5  
1000 s: (109.0...117.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 41.0...43.0  
1000 s: (39.0...45.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...125.0  
1000 s: (112.0...128.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 256 005  
Injection pump  
Pump designation : PES6MW100/321RS1516  
EP type number : 0 413 206 014  
Governor  
Governor design. : RQ250/1200MW84-9  
Governor no. : 0 420 082 064

Customer-spec. information  
Customer : MAN

Engine : D 0826 LF08

1st version kW : 169.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 9.00...12.00

H04

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm : 600

Rack travel in mm : 15.5

Testing:

1st rack travel in: 11.30

Speed rpm : 1245...1260

2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 330...420

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 600  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 800  
Rack travel in m: 12.70...12.90  
4th speed rpm : 1200  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 220  
Rack travel mm : 9.90...10.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.70  
2nd pressure hPa : 600  
Rack travel in m: 11.60...11.90  
3rd pressure hPa : 1000  
Rack travel in m: 12.70...12.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 149.0...152.0  
1000 s: (146.5...154.5)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 81.0...83.0  
1000 s: (79.0...85.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1245...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 60.0...80.0  
1000 s: (57.0...83.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

: MAN #3-7194

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 256 006  
Injection pump  
Pump designation : PES6MM100/321RS1516  
EP type number : 0 413 206 014  
Governor  
Governor design. : RGV250...1200MW83-2  
Governor no. : 0 420 083 216

Customer-spec. information  
Customer : MAN

Engine : D 0826 LFO8

1st version kW : 169.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 10.50...10.60

2nd speed rpm : 810

travel mm : 5.90...6.10

3rd speed rpm : 500

travel mm : 3.70...4.30

4th speed rpm : 250

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 120...128

### Testing:

1st rack travel in: 11.50  
Speed rpm : 1245...1260  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60

### CONSTANT REGULATION

Speed rpm : 330...420

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 600  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 800  
Rack travel in m: 12.70...12.90  
4th speed rpm : 1200  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 220  
Rack travel mm : 9.90...10.00

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.70  
2nd pressure hPa : 600  
Rack travel in m: 11.60...11.90  
3rd pressure hPa : 1000  
Rack travel in m: 12.70...12.90

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1000

H07

Speed rpm : 600  
Del.quantity cm3/ : 149.0...152.0  
1000 s: (146.5...154.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 81.0...83.0  
1000 s: (79.0...85.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1245...1260

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 60.0...80.0  
1000 s: (57.0...83.0)

### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: MAN #7-7195

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 3  
Edition : 21.02.92  
Replaces : 04.90  
Test oil : ISO-4113

Combination no. : 0 403 436 104

Injection pump  
Pump designation : PES6MW100/120RS1143  
EP type number : 0 413 406 137  
Governor  
Governor design. : RQV350...120MW82-1  
Governor no. : 0 420 083 153

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA-830

1st version kW : 179.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25  
: (3.10...3.30)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 7.60...7.80

2nd speed rpm : 1350

travel mm : 8.60...9.00

3rd speed rpm : 350

travel mm : 1.20...1.60

4th speed rpm : 800

travel mm : 4.90...5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 100...108

### Testing:

1st rack travel in: 11.40  
Speed rpm : 1250...1260  
2nd rack travel in: 4.00  
Speed rpm : 1375...1405  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.5

### Testing:

Speed rpm : 200  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 7.40...7.60

### CONSTANT REGULATION

Speed rpm : 360...500

### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 750  
Rack travel in m: 12.70...12.80  
3rd speed rpm : 1000  
Rack travel in m: 12.40...12.60  
4th speed rpm : 900  
Rack travel in m: 12.50...12.70

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.30...11.40

### Measurement

Speed 1/min : 500

1st pressure hPa : 390  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 500  
Rack travel in m: 12.40...12.70  
3rd pressure hPa : 700  
Rack travel in m: 12.90...13.10

### START CUT-OUT

Speed 1/min : 220 (240)

H09

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 143.0...146.0  
1000 s: (140.5...148.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 112.0...114.0  
1000 s: (110.0...116.0)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1250...1260

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (207.0...233.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.40...7.60  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

### Remarks:

:  
Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 D16  
Edition : 21.02.92  
Replaces : 09.91  
Test oil : ISO-4113

Combination no. : 0 403 436 104FB

Injection pump  
Pump designation : PES6MW100/120RS1143  
EP type number : 0 413 406 137  
Governor  
Governor design. : RQV350...1200MW82-1  
Governor no. : 0 420 083 153

Cust. part no. : 3281356

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTAA 8.3

1st version kW : 179.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25  
: (3.10...3.30)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 12.30...12.40  
Del.quantity cm<sup>3</sup>/ : 13.6...13.8  
100 s: (13.4...14.0)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 7.6...7.8  
Del.quantity cm<sup>3</sup>/ : 1.4...1.8  
100 s: (1.1...2.0)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250  
travel mm : 7.60...7.80  
2nd speed rpm : 1350  
travel mm : 8.60...9.00  
3rd speed rpm : 350  
travel mm : 1.20...1.60  
4th speed rpm : 800  
travel mm : 4.90...5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1000  
Del.quantity : 136.0...138.0  
1000 : (134.0...140.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 90...100

Testing:

1st rack travel in: 11.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.7

Testing:

Speed rpm : 200  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 700  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 500  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : 450  
Rack travel in m: 12.40...12.50  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.10  
3rd pressure hPa : 1000  
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 146.0...149.0  
1000 s: (143.5...151.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 125.0...127.0  
1000 s: (123.0...129.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (207.0...233.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.60...7.80  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 5,8 D  
Edition : 14.02.92  
Replaces : 10.91  
Test oil : ISO-4113

Combination no. : 0 403 444 119

Injection pump  
Pump designation : PES4MW100/320RS1199  
EP type number : 0 413 404 112  
Governor  
Governor design. : RQV300...1300MW110K  
Governor no. : 0 420 083 996

Customer-spec. information  
Customer : PERKINS

Engine : 110 TI

1st version kW : 82.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40  
: (3.25...3.45)  
Rack travel in mm : 12.00...14.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 10.00...10.40

2nd speed rpm : 900

travel mm : 6.40...6.60

3rd speed rpm : 480

travel mm : 3.10...3.70

4th speed rpm : 300

travel mm : 1.40...1.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 124.0...126.0

1000 : (122.0...128.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 118...126

Testing:

1st rack travel in: 12.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

#### CONSTANT REGULATION

Speed rpm : 330...500

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 800  
Rack travel in m: 12.00...12.20  
3rd speed rpm : 500  
Rack travel in m: 10.10...10.30  
4th speed rpm : 1000  
Rack travel in m: 12.40...12.70  
5th speed rpm : 400  
Rack travel in m: 9.70...9.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.70...8.80

Measurement

Speed 1/min : 500

1st pressure hPa : 130

H13

Rack travel in m: 9.00...9.10  
2nd pressure hPa : 180  
Rack travel in m: 9.70...10.00  
3rd pressure hPa : 900  
Rack travel in m: 10.10...10.30

#### START CUT-OUT

Speed 1/min : 240 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 300  
Del.quantity cm<sup>3</sup>/ : 118.0...121.0  
1000 s: (115.5...123.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 77.0...79.0  
1000 s: (75.0...81.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°  
before start of delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 444 135

Injection pump  
Pump designation : PES4MW100/320RS1223  
EP type number : 0 413 404 119  
Governor  
Governor design. : RGV300...1100MW122-1  
K  
Governor no. : 0 420 083 990

Customer-spec. information  
Customer : VME

Engine : TD45E  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 173...176

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 12.8...13.0

100 s: (12.6...13.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.8...3.2

100 s: (2.5...3.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

travel mm : 10.00...10.40

2nd speed rpm : 800

travel mm : 6.10...6.30

3rd speed rpm : 500

travel mm : 3.40...4.00

4th speed rpm : 300

travel mm : 1.50...1.90

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Aneroid pressure h: 750

Del.quantity : 128.0...130.0

1000 : (126.0...132.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 116...124

### Testing:

1st rack travel in: 13.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 880  
Rack travel in m: 15.00...15.10  
3rd speed rpm : 550  
Rack travel in m: 14.20...14.30  
4th speed rpm : 750  
Rack travel in m: 14.70...14.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : -  
Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 550

1st pressure hPa : 220  
Rack travel in m: 13.10...13.20  
2nd pressure hPa : 370  
Rack travel in m: 13.60...13.90  
3rd pressure hPa : 750  
Rack travel in m: 14.20...14.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750  
Speed rpm : 880

Del.quantity cm<sup>3</sup>/ : 135.5...138.5  
1000 s: (133.0...141.0)  
Spread cm<sup>3</sup> : 5.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 86.0...88.0  
1000 s: (84.0...90.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 100

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...155.0  
1000 s: (142.0...158.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 28.0...32.0  
1000 s: (25.5...34.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 444 137  
Injection pump  
Pump designation : PES4MW100/720RS1212  
EP type number : 0 413 404 114  
Governor  
Governor design. : RQV300...1300MW50-23  
Governor no. : 0 420 083 269

Customer-spec. information  
Customer : MB-NFZ

Engine : OM364LA

1st version kW : 102.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.20...13.30

Del.quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Testing:

1st rack travel in: 12.20  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1440...1470  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.00...10.10

Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 400  
Rack travel in m: 12.60...12.80  
3rd pressure hPa : 700  
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

H17

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 36.0...38.0  
1000 s: (34.0...40.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...95.0  
1000 s: (82.0...98.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 444 138  
Injection pump  
Pump designation : PES4MW100/72ORS1151  
EP type number : 0 413 404 104  
Governor  
Governor design. : RQV300...1300MW50-27  
Governor no. : 0 420 083 273

Customer-spec. information  
Customer : MB-NFZ

Engine : OM364A

1st version kW : 79.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness : 8.00x2.50x600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50

TORQUE CONTROL  
Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 600  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 1000  
Rack travel in m: 11.60...11.70  
4th speed rpm : 1175  
Rack travel in m: 11.30...11.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.70...9.80

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 300  
Rack travel in m: 11.20...11.40  
3rd pressure hPa : 700  
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 220 (240)

H19

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 75.0...78.0  
1000 s: (72.5...80.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 46.0...48.0  
1000 s: (44.0...50.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 2  
 Edition : 21.02.92  
 Replaces : 08.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 220  
 Injection pump  
 Pump designation : PES6MW100/320RS1171  
 EP type number : 0 413 406 156  
 Governor  
 Governor design. : RQV300...1400MW80-3  
 Governor no. : 0 420 083 183

Customer-spec. information  
 Customer : RVI

Engine : MIDR 06.02.12D

1st version kW : 134.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test Lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

H20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.10...5.50

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1590

travel mm : 9.50...9.90

2nd speed rpm : 1450

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 750

Del.quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 118...126

Testing:

1st rack travel in: 10.10

Speed rpm : 1470...1480  
2nd rack travel in: 4.00  
Speed rpm : 1590...1620  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 750  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.40...8.60  
2nd pressure hPa : 200  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 100  
Rack travel in m: 8.80...9.10

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750  
Speed rpm : 900  
Del.quantity cm3/ : 87.5...90.5  
1000 s: (85.0...93.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 40.0...42.0  
1000 s: (38.0...44.0)

#### BREAKAWAY

H21

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1470...1480

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 95.0...115.0  
1000 s: (92.0...118.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.10...5.50  
Del.quantity cm3/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark made with  
prestroke 3.00...3.10 mm at barrel 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 10,0 S  
Edition : 14.02.92  
Replaces : 04.91  
Test oil : ISO-4113

Combination no. : 0 403 446 250

Injection pump  
Pump designation : PES6MW100/320RS1194  
EP type number : 0 413 406 186  
Governor  
Governor design. : RQV300...1300MW108K  
Governor no. : 0 420 083 998

Customer-spec. information  
Customer : PERKINS

Engine : 180 TI

1st version kW : 134.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40  
: (3.25...3.45)  
Rack travel in mm : 12.00...14.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 13.4...13.6

100 s: (13.2...13.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 10.00...10.40

2nd speed rpm : 900  
travel mm : 6.40...6.60

3rd speed rpm : 480  
travel mm : 3.10...3.70

4th speed rpm : 300  
travel mm : 1.40...1.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 134.0...136.0

1000 : (132.0...138.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 118...126

#### Testing:

1st rack travel in: 13.30  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1480...1510  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

#### CONSTANT REGULATION

Speed rpm : 330...500

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300  
Rack travel in m: 14.30...14.40  
2nd speed rpm : 800  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 500  
Rack travel in m: 11.70...11.90  
4th speed rpm : 1000  
Rack travel in m: 13.60...13.90  
5th speed rpm : 700  
Rack travel in m: 12.60...12.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.90...10.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : 180

H23

Rack travel in m: 10.40...10.50  
2nd pressure hPa : 220  
Rack travel in m: 10.90...11.20  
3rd pressure hPa : 900  
Rack travel in m: 11.70...11.90

#### START CUT-OUT

Speed 1/min : 240 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 126.0...129.0  
1000 s: (123.5...131.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 77.0...79.0  
1000 s: (75.0...81.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°  
before start of delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB6, 101  
Edition : 28.02.92  
Replaces : 12.91  
Test oil : ISO-4113

Combination no. : 0 403 446 274

Injection pump  
Pump designation : PES6MW100/720RS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RQ300/1300MW105-3  
Governor no. : 0 420 082 050

Customer spec. information  
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 715 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.75)  
Rack travel in mm : 9.00...12.00

H24

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 8.80...9.20

2nd speed rpm : 1300

travel mm : 7.50...7.70

3rd speed rpm : 500

travel mm : 4.90...5.50

4th speed rpm : 300

travel mm : 2.10...2.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 1200

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 96...104

Setting point:  
Speed rpm : 1200  
Rack travel in mm : 15.5

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1345...1360  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 510...550

TORQUE CONTROL  
Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 1100  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...9.90  
2nd pressure hPa : 400  
Rack travel in m: 11.10...11.40  
3rd pressure hPa : 700  
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 49.0...51.0  
1000 s: (47.0...53.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 J  
Edition : 28.02.92  
Replaces : 10.91  
Test oil : ISO-4113

Combination no. : 0 403 446 285

Injection pump  
Pump designation : PES6MW100/320RS1214  
EP type number : 0 413 406 204  
Governor  
Governor design. : RQV275...1250MW115K  
Governor no. : 0 420 083 994

Customer-spec. information  
Customer : RVI

Engine : MIDR 060226 W

1st version kW : 151.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30  
                  : (4.15...4.35)  
Rack travel in mm : 16.50...19.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.00...14.10

Del.quantity cm<sup>3</sup>/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 6.00...6.20

Del.quantity cm<sup>3</sup>/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1330  
travel mm : 9.80...10.20

2nd speed rpm : 950  
travel mm : 6.90...7.10

3rd speed rpm : 550  
travel mm : 3.60...4.20

4th speed rpm : 275  
travel mm : 0.80...1.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 294...302

Testing:

1st rack travel in: 13.00

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1465...1495

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 240...248

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.9

Testing:

Speed rpm : 200

Minimum rack travel: 6.70

Speed rpm : 275

Rack travel in mm : 6.00 ..6.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.00...14.10

2nd speed rpm : 700

Rack travel in m: 13.05...13.15

3rd speed rpm : 1000

Rack travel in m: 13.40...13.60

4th speed rpm : 500

Rack travel in m: 12.70...12.80

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 320

Rack travel in m: 12.20...12.30

3rd pressure hPa : 200

Rack travel in m: 11.30...11.60

START CUT-OUT

H27

Speed 1/min : 210 (230)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 700

Del.quantity cm3/ : 108.5...111.5

1000 s: (106.0...114.0)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 71.0...73.0

1000 s: (69.0...75.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1320...1330

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 90.0...110.0

1000 s: (87.0...113.0)

Rack travel in mm : 19.50...21.00

## LOW IDLE

Speed rpm : 275

Rack travel in mm : 6.00...6.20

Del.quantity cm3/ : 21.0...25.0

1000 s: (18.5...27.5)

Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 K  
Edition : 21.02.92  
Replaces : 10.91  
Test oil : ISO-4113

Combination no. : 0 403 446 286

Injection pump  
Pump designation : PES6MW100/32ORS1216  
EP type number : 0 413 406 206  
Governor  
Governor design. : RQV350...1175MW113-2  
Governor no. : 0 420 083 248

Customer-spec. information  
Customer : RVI

Engine : MIDR 060226 X

1st version kW : 166.0  
Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30  
: (4.15...4.35)  
Rack travel in mm : 11.50...14.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 5.90...6.30

Del.quantity cm3/ : 2.8...3.2

100 s: (2.5...3.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
travel mm : 7.80...8.20

2nd speed rpm : 1220  
travel mm : 6.80...7.00

3rd speed rpm : 600  
travel mm : 3.20...3.80

4th speed rpm : 350  
travel mm : 0.70...1.10

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1460

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000

Del.quantity : 117.0...119.0

1000 : (115.0...121.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 294...302

Testing:

1st rack travel in: 13.80

Speed rpm : 1250...1260

2nd rack travel in: 4.00

Speed rpm : 1460...1490

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 244...252

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.7

Testing:

Speed rpm : 200

Minimum rack travel: 6.90

Speed rpm : 275

Rack travel in mm : 5.90...6.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.40...10.00

2nd pressure hPa : 600

Rack travel in m: 13.30...13.40

3rd pressure hPa : 240

Rack travel in m: 13.10...13.40

START CUT-OUT

Speed 1/min : 260 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 700

Del.quantity cm3/ : 123.0...127.0

1000 s: (121.0...129.0)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 62.0...64.0

1000 s: (60.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 1250...1260

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 88.0...102.0

1000 s: (85.0...105.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.90...6.30

Del.quantity cm3/ : 28.0...32.0

1000 s: (25.5...34.5)

Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 K i  
Edition : 14.02.92  
Replaces : 10.91  
Test oil : ISO-4113

Combination no. : 0 403 446 293

Injection pump  
Pump designation : PES6MW100/320RS1216  
EP type number : 0 413 406 206  
Governor  
Governor design. : RQV275...1250MW124K  
Governor no. : 0 420 083 989

Customer-spec. information  
Customer : RVI

Engine : MIDR 060226 U

1st version kW : 110.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30  
: (4.15...4.35)  
Rack travel in mm : 11.50...14.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 5.80...6.20

Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1330  
travel mm : 9.80...10.20

2nd speed rpm : 925  
travel mm : 6.60...6.80

3rd speed rpm : 550  
travel mm : 3.60...4.20

4th speed rpm : 275  
travel mm : 0.80...1.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 118...126

Testing:

1st rack travel in: 12.00

Speed rpm : 1320...1340

2nd rack travel in: 4.00

Speed rpm : 1460...1500

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 58...66

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.0

Testing:

Speed rpm : 100

Minimum rack travel: 6.50

Speed rpm : 275

Rack travel in mm : 5.80...6.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 13.00...13.10

2nd speed rpm : 700

Rack travel in m: 11.60...11.70

3rd speed rpm : 1000

Rack travel in m: 12.30...12.50

4th speed rpm : 500

Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/ : 86.5...89.5

1000 s: (84.0...92.0)

Spread cm3 : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1320...1340

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 88.0...112.0

1000 s: (85.0...115.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.80...6.20

Del.quantity cm3/ : 20.0...24.0

1000 s: (17.5...26.5)

Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 B 8  
 Edition : 21.02.92  
 Replaces : 01.92  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 294  
 Injection pump  
 Pump designation : PES6MW100/72ORS1131-1  
 EP type number : 0 413 406 165  
 Governor  
 Governor design. : RQV350...1100MW67-4  
 Governor no. : 0 420 083 261

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 162.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.60...13.70

Del.quantity cm<sup>3</sup>/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 7.80...8.30

2nd speed rpm : 880

travel mm : 5.90...6.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

Del.quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 120...128

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.4

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.30...5.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.40...9.50

Measurement  
Speed 1/min : 500

1st pressure hPa : 400  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 600  
Rack travel in m: 12.60...12.80  
3rd pressure hPa : 1000  
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 104.5...107.5  
1000 s: (102.0...110.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 35.0...37.0  
1000 s: (33.0...39.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,7 A 4  
 Edition : 21.02.92  
 Replaces : 11.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 296  
 Injection pump  
 Pump designation : PES6MW100/32ORS1204  
 EP type number : 0 413 406 192  
 Governor  
 Governor design. : RQV350...1350MW46-42  
 Governor no. : 0 420 083 263

Customer spec. information  
 Customer : NAVISTAR

Engine : DTA-360

1st version kW : 142.0  
 Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450  
 travel mm : 8.20...8.60

2nd speed rpm : 1350  
 travel mm : 7.40...7.60

3rd speed rpm : 500  
 travel mm : 2.50...3.10

4th speed rpm : 350  
 travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 900  
 Del.quantity : 109.5...111.5  
 1000 : (107.5...113.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 100...108

Testing:

1st rack travel in: 9.60  
Speed rpm : 1415...1435  
2nd rack travel in: 4.00  
Speed rpm : 1510...1520  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.30...8.40

Measurement

Speed 1/min : 500

1st pressure hPa : 195  
Rack travel in mm: 8.90...9.00  
2nd pressure hPa : 345  
Rack travel in mm: 9.90...10.30  
3rd pressure hPa : 900  
Rack travel in mm: 10.60...10.70

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 1350  
Del.quantity cm3/ : 105.0...109.0  
1000 s: (103.0...111.0)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 62.5...64.5  
1000 s: (60.5...66.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1415...1435

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: IHC #1818797C91  
Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,7 A 5  
Edition : 14.02.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 403 446 297

Injection pump  
Pump designation : PES6MW100/320RS1204  
EP type number : 0 413 406 192  
Governor  
Governor design. : RQV350...1350MW46-43  
Governor no. : 0 420 083 264

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-366

1st version kW : 127.0  
Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35  
: (3.20...3.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 10.7...10.9

100 s: (10.5...11.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 8.20...8.60

2nd speed rpm : 1350

travel mm : 7.40...7.60

3rd speed rpm : 500

travel mm : 2.50...3.10

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 107.5...109.5

1000 : (105.5...111.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 100...108

Testing:

1st rack travel in: 9.50  
Speed rpm : 1420...1440  
2nd rack travel in: 4.00  
Speed rpm : 1520...1530  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.1

Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 350  
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.20...8.30

Measurement

Speed 1/min : 500

1st pressure hPa : 180  
Rack travel in m: 8.90...9.00  
2nd pressure hPa : 330  
Rack travel in m: 9.70...10.00  
3rd pressure hPa : 900  
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 1350  
Del.quantity cm<sup>3</sup>/ : 103.5...107.5  
1000 s: (101.5...109.5)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 61.5...63.5  
1000 s: (59.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1420...1440

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: IHC #1819274C91  
Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 302  
Injection pump  
Pump designation : PES6MW100/72ORS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RGV300...1300MW50-24  
Governor no. : 0 420 083 270

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter  
x Wall thickness : 8.00X2.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.75)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Setting point:  
Speed rpm : 1350  
Rack travel in mm : 16.5

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

TORQUE CONTROL  
Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 1100  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.80...9.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 400  
Rack travel in m: 10.80...11.10  
3rd pressure hPa : 700  
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 49.0...51.0  
1000 s: (47.0...53.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 303  
Injection pump  
Pump designation : PES6MW100/720RS1131-1  
EP type number : 0 413 406 165  
Governor  
Governor design. : RQV300...1300MW50-25  
Governor no. : 0 420 083 271

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 155.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm<sup>3</sup>/ : 9.8...10.0

100 s : (9.6...10.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s : (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h : 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1440...1470  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.30...10.40

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 350  
Rack travel in m: 12.40...12.70  
3rd pressure hPa : 1000  
Rack travel in m: 13.10...13.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 87.0...91.0  
1000 s: (85.0...93.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 36.0...38.0  
1000 s: (34.0...40.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 304  
Injection pump  
Pump designation : PES6MW100/72ORS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RGV300...1200MW50-26  
Governor no. : 0 420 083 272

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 115.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 059

Opening  
pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm<sup>3</sup>/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 7.40...7.80

2nd speed rpm : 880

travel mm : 4.90...5.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 107...115

Testing:  
1st rack travel in: 9.20  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1335...1365  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80

TORQUE CONTROL  
Dimension a mm : 0.80  
Torque control curve -- 1st version  
1st speed rpm : 1200  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 600  
Rack travel in m: 10.90...11.10  
3rd speed rpm : 1100  
Rack travel in m: 10.30...10.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.60...8.70

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 8.90...9.00  
2nd pressure hPa : 350  
Rack travel in m: 10.20...10.50  
3rd pressure hPa : 700  
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 78.0...81.0  
1000 s: (75.5...83.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 44.0...46.0  
1000 s: (42.0...48.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.20  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER  
Edition : 17.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 295  
Injection pump  
Pump designation : PES8MW100/720RS1142  
EP type number : 0 413 408 011  
Governor  
Governor design. : RQV500...1100MW77  
Governor no. : 0 420 083 117

Customer spec. information  
Customer : PERKINS

Engine : TV 8.640

1st version kW : 201.0  
Rated speed : 2200  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 8- 7- 5- 4- 3- 6- 2

Phasing : 0-45-90-135-180-225-270-315  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 14.30...14.40  
Del. quantity cm<sup>3</sup>/ : 12.1...12.3  
100 s: (11.9...12.5)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 500.0  
Rack travel in mm : 6.6...6.7  
Del. quantity cm<sup>3</sup>/ : 0.9...1.3  
100 s: (0.7...1.6)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1225  
travel mm : 8.30...8.50  
2nd speed rpm : 1250  
travel mm : 9.50...9.90  
3rd speed rpm : 500  
travel mm : 1.30...1.70  
4th speed rpm : 700  
travel mm : 3.20...3.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1225  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 600  
Del. quantity : 121.0...123.0  
1000 : (119.0...125.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 13.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 500  
Rack travel in mm : 6.60...6.70

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.20...12.50

Measurement  
Speed 1/min : 500

1st pressure hPa : 390  
Rack travel in m: 12.80...12.90  
2nd pressure hPa : 520  
Rack travel in m: 13.50...13.80  
3rd pressure hPa : 700  
Rack travel in m: 14.30...14.40

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 74.5...76.5  
1000 s: (72.5...78.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

## LOW IDLE

Speed rpm : 500  
Rack travel in mm : 6.60...6.70  
Del.quantity cm3/ : 9.5...13.5  
1000 s: (7.0...16.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 T  
Edition : 14.02.92  
Replaces : 08.91  
Test oil : ISO-4113

Combination no. : 0 403 466 126

Injection pump  
Pump designation : PES6MW100/120RS1218  
EP type number : 0 413 406 208  
Governor  
Governor design. : RSV400...1050MW7A319  
-17  
Governor no. : 0 420 085 174

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA

1st version kW : 261.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25  
: (3.10...3.30)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.10...15.20

Del.quantity cm3/ : 20.5...20.7

100 s: (20.3...20.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.7...2.1  
100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 205.5...207.5

1000 : (203.5...209.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 104...112

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
3rd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1250  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.10...6.30

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 17.5...21.5  
1000 s: (15.0...24.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: CUM #3919723

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 5,6 B  
 Edition : 21.02.92  
 Replaces : 09.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 474 008  
 Injection pump  
 Pump designation : PES4MM100/720RS1181  
 EP type number : 0 413 404 107  
 Governor  
 Governor design. : RSV400...1000MW1A333  
 Governor no. : 0 420 085 118

Customer-spec. information  
 Customer : LIEBHERR

Engine : 914  
 1st version kW : 120.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 049  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32  
 Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.20...12.30  
 Del.quantity cm3/ : 15.3...15.5  
 100 s: (15.1...15.7)  
 Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.1...6.3  
 Del.quantity cm3/ : 2.0...2.4  
 100 s: (1.7...2.6)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 3.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del.quantity : 153.0...155.0  
 1000 : (151.0...157.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 96...104

Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1175  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 600  
Rack travel in m: 12.20...12.30  
5th speed rpm : 450  
Rack travel in m: 13.00...13.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 154.5...157.5  
1000 s: (152.0...160.0)  
Spread cm3 : 3.50  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 20.0...24.0  
1000 s: (17.5...26.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 H 7  
 Edition : 21.02.92  
 Replaces : 09.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 474 019  
 Injection pump  
 Pump designation : PES4M100/720RS1151  
 EP type number : 0 413 404 104  
 Governor  
 Governor design. : RSV350...1200MWA346  
 -3  
 Governor no. : 0 420 085 179

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM 364 A

1st version kW : 77.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.0...6.8  
 Del.quantity cm3/ : 1.0...1.4  
 100 s: (0.7...1.6)

Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 88.0...90.0  
 1000 : (86.0...92.0)

Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version

Control Lever

position degrees: 104...112

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.50  
Speed rpm : 1240...1245 \*  
2nd rack travel in: 4.00  
Speed rpm : 1285...1298  
3rd rack travel in: 4.00  
Speed rpm : 1325...1355  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1240...1255  
Speed rpm : 10.50

#### LOW IDLE 1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 600  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 1000  
Rack travel in m: 11.90...12.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.80...9.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 375  
Rack travel in m: 11.50...11.80  
3rd pressure hPa : 700  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 83.5...86.5  
1000 s: (81.0...89.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 46.0...48.0  
1000 s: (44.0...50.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1240...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 75.0...85.0  
1000 s: (72.0...88.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.80  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

\* Read off speed set under 1.  
Add 45...53 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.  
Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 474 022  
Injection pump  
Pump designation : PES4MM100/720RS1151  
EP type number : 0 413 404 104  
Governor  
Governor design. : RSV350...1300MWA329  
-12  
Governor no. : 0 420 085 189

Customer-spec. information  
Customer : MB-NFZ

Engine : OM364A

1st version kW : 79.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280  
Rack travel in mm : 10.80...10.90  
Del.quantity cm3/ : 8.2...8.4  
100 s: (8.0...8.6)  
Spread cm3 : 0.3  
100 s: (0.6)  
2nd speed rpm : 350.0  
Rack travel in mm : 6.0...6.8  
Del.quantity cm3/ : 1.0...1.4  
100 s: (0.7...1.6)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1280  
Aneroid pressure h: 700  
Del.quantity : 82.0...84.0  
1000 : (80.0...86.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 106...114

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.80  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.00...6.80

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1280  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 600  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 1000  
Rack travel in m: 11.70...11.80  
4th speed rpm : 1175  
Rack travel in m: 11.00...11.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.80...9.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 300  
Rack travel in m: 11.20...11.40  
3rd pressure hPa : 700  
Rack travel in m: 11.70...11.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 75.0...78.0  
1000 s: (72.5...80.5)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 46.0...48.0  
1000 s: (44.0...50.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1320...1330

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.00...6.80  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 474 023  
  
Injection pump  
Pump designation : PES4MW100/720RS1212  
EP type number : 0 413 404 114  
Governor  
Governor design. : RSV350...1300MWOA329  
-13  
Governor no. : 0 420 085 191

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 364 LA

1st version kW : 100.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 6.5...6.8  
Del.quantity cm3/ : 1.0...1.4  
100 s: (0.7...1.6)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 700

Del.quantity : 101.0...103.0  
1000 : (99.0...105.0)

Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 114...122

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.20  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
4th rack travel in: 14.50  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 82...90  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.50...6.80

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.20...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 400  
Rack travel in m: 12.30...12.50  
3rd pressure hPa : 700  
Rack travel in m: 13.20...13.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 36.0...38.0  
1000 s: (34.0...40.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1320...1330

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 85.0...95.0  
1000 s: (82.0...98.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.50...6.80  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE  
Edition : 22.01.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 476 081B  
Injection pump  
Pump designation : PES6MW100/720RS1196  
EP type number : 0 413 406 184  
Governor  
Governor design. : RSV350...1050MWOA338  
Governor no. : 0 420 085 138

Customer-spec. information  
Customer : LIEBHERR

Engine : D 916 T

1st version kw : 150.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.40...3.50  
: (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 4.0...4.4

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 750

Del.quantity : 129.0...131.0

1000 : (127.0...133.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 88...96

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.80

Speed rpm : 1030...1045  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 3.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 3.50...3.90  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 500  
Rack travel in m: 10.80...10.90  
3rd speed rpm : 800  
Rack travel in m: 10.80...10.90  
5th speed rpm : 400  
Rack travel in m: 12.30...12.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : -  
Rack travel mm : 9.60...9.70

#### Measurement

Speed 1/min : 550

1st pressure hPa : 400  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 750  
Rack travel in m: 10.80...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...133.0  
1000 s: (127.5...135.5)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm3/ : 111.0...113.0  
1000 s: (109.0...115.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1030...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.00...4.40  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,7, B  
 Edition : 14.02.92  
 Replaces : 04.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 106  
 Injection pump  
 Pump designation : PES6MW100/320RS1213  
 EP type number : 0 413 406 203  
 Governor  
 Governor design. : RSV350...750MW7A345  
 Governor no. : 0 420 085 168

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT-466

1st version kW : 159.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 16.2...16.4

100 s: (16.0...16.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 162.5...164.5

1000 : (160.5...166.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.20  
Speed rpm : 750...760  
2nd rack travel in: 4.00  
Speed rpm : 795...805  
3rd rack travel in: 4.00  
Speed rpm : 800...810  
4th rack travel in: 850  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 750...760

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE  
Edition : 21.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 476 112  
  
Injection pump  
Pump designation : PES6MW100/720RS1225  
EP type number : 0 413 406 212  
Governor  
Governor design. : RSV400...1000MW1A338  
-1  
Governor no. : 0 420 085 184

Customer-spec. information  
Customer : LIEBHERR

Engine : D 916 TI

1st version kW : 173.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance ± - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000  
  
Rack travel in mm : 13.00...13.10  
  
Del.quantity cm<sup>3</sup>/ : 14.0...14.2  
100 s: (13.8...14.4)

Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.9...6.1  
Del.quantity cm<sup>3</sup>/ : 1.4...1.8  
100 s: (1.1...2.0)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 750  
Del.quantity : 140.5...142.5  
1000 : (138.5...144.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 98...106

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.00  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
3rd rack travel in: 4.00  
Speed rpm : 1085...1115  
4th rack travel in: 1200  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.40...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 500  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 700  
Rack travel in m: 13.00...13.20  
5th speed rpm : 450  
Rack travel in m: 13.80...14.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : -  
Rack travel mm : 10.90...11.10

#### Measurement

Speed 1/min : 550

1st pressure hPa : 300  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 450  
Rack travel in m: 12.30...12.60  
3rd pressure hPa : 750  
Rack travel in m: 13.10...13.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750  
Speed rpm : 500

Del.quantity cm3/ : 136.5...139.5  
1000 s: (134.0...142.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm3/ : 100.5...102.5  
1000 s: (98.5...104.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 476 114  
  
Injection pump  
Pump designation : PES6MM100/72ORS1131-  
1  
EP type number : 0 413 406 165  
Governor  
Governor design. : RSV750...1100MWOA325  
-4  
Governor no. : 0 420 085 188

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 170.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1080  

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Rack travel in mm : 13.00...13.10  

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Del.quantity cm<sup>3</sup>/ : 10.3...10.5  
100 s: (10.1...10.7)  

---

Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 5.8...6.3  
Del.quantity cm<sup>3</sup>/ : 1.0...1.4  
100 s: (0.7...1.6)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1080  
Del.quantity : 103.0...105.0  
1000 : (101.0...107.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 82...90

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1120...1125 \*

2nd rack travel in: 4.00  
Speed rpm : 1145...1158  
3rd rack travel in: 4.00  
Speed rpm : 1151...1163  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 750  
Rack travel in mm : 5.80...6.30

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 925  
Rack travel in m: 13.40...13.60  
3rd speed rpm : 750  
Rack travel in m: 13.90...14.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 108.0...111.0  
1000 s: (105.5...113.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1120...1125

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

K07

Speed rpm : 350  
Rack travel in mm : 5.80...6.30  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC  
Edition : 14.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 476 115  
  
Injection pump  
Pump designation : PES6MW100/32ORS1226  
EP type number : 0 413 406 213  
Governor  
Governor design. : RSV350...750MW7A345-1  
Governor no. : 0 420 085 190

Customer-spec. information  
Customer : NAVISTAR

Engine : DT-466

1st version kW : 185.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

K08

Prestroke mm : 3.45...3.55  
: (3.40...3.60)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 14.70...14.80  
Del.quantity cm3/ : 19.3...19.5  
100 s: (19.1...19.7)  
Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 5.4...5.6  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 193.0...195.0  
1000 : (191.0...197.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 82...90

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.70  
Speed rpm : 750...760  
2nd rack travel in: 4.00  
Speed rpm : 795...805  
3rd rack travel in: 4.00  
Speed rpm : 800...810  
4th rack travel in: 850  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.70  
Speed rpm : 750...760

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

: IHC #1819368C91



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 28.02.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 476 116  
  
Injection pump  
Pump designation : PES6MW100/72ORS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RSV350...1300MWOA329  
-14  
Governor no. : 0 420 085 192  
  
Customer-spec. information  
Customer : MB-NFZ  
  
Engine : OM 366 A  
  
1st version kW : 125.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32  
  
Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280  
  
Rack travel in mm : 10.50...10.60  
  
Del.quantity cm3/ : 8.8...9.0  
100 s: (8.6...9.2)  
  
Spread cm3 : 0.3  
100 s: (0.6)  
  
2nd speed rpm : 350.0  
Rack travel in mm : 6.0...6.2  
Del.quantity cm3/ : 1.0...1.4  
100 s: (0.7...1.6)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1280  
Aneroid pressure h: 800  
Del.quantity : 88.0...90.0  
1000 : (86.0...92.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 105...113  
  
Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:  
1st rack travel in: 9.50  
Speed rpm : 1330...1335  
2nd rack travel in: 4.00

Speed rpm : 1410...1423  
3rd rack travel in: 4.00  
Speed rpm : 1416...1428  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.00...6.20

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1280  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 800  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 1100  
Rack travel in m: 10.80...11.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.20...9.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 400  
Rack travel in m: 10.50...10.70  
3rd pressure hPa : 800  
Rack travel in m: 11.20...11.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 800  
Speed rpm : 800  
Del.quantity cm3/ : 88.0...91.0  
1000 s: (85.5...93.5)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 49.0...51.0  
1000 s: (47.0...53.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1330...1335

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a11  
Edition : 04.02.92  
Replaces : 08.06.90  
Test oil : ISO-4113

Combination no. : 9 400 230 089

Injection pump  
Pump designation : PES6A1000320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100A0C2190  
-3R  
Governor no. : 9 420 234 125

Customer-spec. information  
Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 129.0  
Rated speed : 2200  
2nd version kW : ?  
3rd version kW : ?  
4th version kW : ?

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 9.5...9.7

100 s: (9.3...9.9)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 95.5...97.5

1000 : (93.5...99.5)

Spread cm3 : 4.00

1000 : (6.50)

2nd version

Speed rpm : 1100

Aneroid pressure h: -

Del.quantity cm3/ : 126.5...128.5

1000 s: (124.5...130.5)

Spread cm<sup>3</sup> : 3.5  
 1000 s: (6.0)

3rd version  
 Speed rpm : 1250  
 Aneroid pressure h: -  
 Del.quantity cm<sup>3</sup>/ : 121.0...123.0  
 1000 s: (119.0...125.0)

Spread cm<sup>3</sup> : 3.5  
 1000 s: (6.0)

4th version  
 Speed rpm : 1100  
 Aneroid pressure h: -  
 Del.quantity cm<sup>3</sup>/ : 96.5...98.5  
 1000 s: (94.5...100.5)

Spread cm<sup>3</sup> : 3.5  
 1000 s: (6.0)

#### RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:  
 1st rack travel in: 9.60  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1190...1220  
 3rd rack travel in: 4.00  
 Speed rpm : 1190...1220  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.40

2nd version  
 Control lever  
 position degrees: 39...47

Testing:  
 1st rack travel in: 11.70  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1200...1230  
 3rd rack travel in: 4.00  
 Speed rpm : 1205...1235  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.40

3rd version  
 Control lever  
 position degrees: 48...56

Testing:  
 1st c-rod trav.mm : 11.00  
 Speed rpm : 1290...1300  
 2nd rack travel in: 4.00  
 Speed rpm : 1355...1385  
 3rd rack travel in: 4.00  
 Speed rpm : 1360...1390  
 4th rack travel in: 1450  
 Speed rpm : 0.30...1.40

4th version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 9.70  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1200...1230  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.40

LOW IDLE 1  
 Control lever  
 position degrees: 19...27  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 5.4

Testing:  
 Speed rpm : 100  
 Minimum rack travel: 19.00  
 Speed rpm : 400  
 Rack travel in mm : 5.80...6.00  
 Rack travel in mm : 2.00  
 Speed rpm : 500...560

#### TORQUE CONTROL

Torque control curve - 4th version  
 1st speed rpm : 1100  
 Rack travel in m: 10.7...10.8  
 2nd speed rpm : 750  
 Rack travel in m: 12.3...12.5

#### FUEL DELIVERY CHARACTERISTICS

2nd version  
 Speed rpm : 750  
 Del.quantity cm<sup>3</sup>/ : 122.0...126.0  
 1000 s: (120.0...128.0)

3rd version  
 Speed rpm : 750  
 Del.quantity cm<sup>3</sup>/ : 122.0...126.0  
 1000 s: (120.0...128.0)

4th version  
 Speed rpm : 750  
 Del.quantity cm<sup>3</sup>/ : 119.5...123.5  
 1000 s: (117.5...125.5)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1140...1150

2nd version

1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1140...1150

3rd version

1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 1290...1300

4th version

1mm rack travel less than  
full load rack tr: 9.70  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: VERS.1=CDC# 3915960  
: 2=3909940,3=3907180  
: 4=3906545

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 4.3.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 230 097

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100AOC2190  
-8R  
Governor no. : 9 420 234 137

Cust. part no. : T3

Customer spec. information  
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : -  
2nd version kW : ?

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 12.40...12.50

---

Del.quantity cm3/ : 12.2...12.4

---

100 s: (12.0...12.6)

---

Spread cm3 : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 400

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 122.5...124.5

1000 : (120.5...126.5)

Spread cm3 : 3.50

1000 : (6.00)

2nd version

Speed rpm : 1000

Del.quantity cm3/ : 119.0...121.0

1000 s: (117.0...123.0)

Spread cm3 : 3.5

1000 s: (6.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 38...46

### Testing:

1st rack travel in: 11.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
3rd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

2nd version  
Control lever  
position degrees: 34...42

### Testing:

1st rack travel in: 11.10  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
3rd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 19...297  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 440...500

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1090...1100

2nd version  
1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1040...1050

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (125.0...155.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

### Remarks:

: VERS.1=CDC # 3906547  
: VERS.2=CDC # 3906551

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a13  
 Edition : 05.03.92  
 Replaces : 01.02.90  
 Test oil : ISO-4113

Combination no. : 9 400 230 099

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050AOC2190  
 -10R  
 Governor no. : 9 420 234 142

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 89.0  
 Rated speed : 2100  
 2nd version kW : ?  
 3rd version kW : ?  
 4th version kW : ?  
 5th version kW : ?

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 9.60...9.70

---

Del.quantity cm3/ : 8.2...8.4

---

100 s: (8.0...8.6)

---

Spread cm3 : 0.4

---

100 s: (0.6)

---

2nd speed rpm : 400

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm3 : 4.00

1000 : (6.50)

2nd version



Speed rpm : 1100  
Del.quantity cm3/ : 105.5...107.5  
1000 s: (103.5...109.5)  
Spread cm3 : 3.5  
1000 s: (6.0)

#### 3rd version

Speed rpm : 1100  
Del.quantity cm3/ : 88.0...90.0  
1000 s: (86.0...92.0)  
Spread cm3 : 3.5  
1000 s: (6.0)

#### 4th version

Speed rpm : 1050  
Del.quantity cm3/ : 108.5...110.5  
1000 s: (106.5...112.5)  
Spread cm3 : 3.5  
1000 s: (6.0)

#### 5th version

Speed rpm : 1000  
Del.quantity cm3/ : 98.5...100.5  
1000 s: (96.5...102.5)  
Spread cm3 : 3.5  
1000 s: (6.0)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 41...49

##### Testing:

1st rack travel in: 8.60  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

##### 2nd version

Control lever  
position degrees: 61...69

##### Testing:

1st rack travel in: 10.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
3rd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

##### 3rd version

Control lever  
position degrees: 45...53

##### Testing:

1st c-rod trav.mm : 9.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00

Speed rpm : 1180...1210  
3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

##### 4th version

Control lever  
position degrees: 41...49

##### Testing:

1st rack travel in: 10.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
3rd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

##### 5th version

Control lever  
position degrees: 36...44

##### Testing:

1st rack travel in: 9.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
3rd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

##### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050  
Rack travel in m: 9.60...9.70  
2nd speed rpm : 750  
Rack travel in m: 10.40...10.60

Torque control curve - 3rd version

1st speed rpm : 1100  
Rack travel in m: 10.0...10.1  
2nd speed rpm : 800  
Rack travel in m: 10.5...10.7

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 86.5...90.5  
1000 s: (84.5...92.5)

### 3rd version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 92.0...96.0  
1000 s: (90.0...98.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 8.60  
Speed rpm : 1095...1105

### 2nd version

1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1140...1150

### 3rd version

1mm rack travel less than  
full load rack tr: 9.00  
Speed rpm : 1140...1150

### 4th version

1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1090...1100

### 5th version

1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 1040...1050

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

K19

: 1.VERS=CDC # 3915964

Adjustment without torque-control 3906537  
spring retainer with 1 mm less 5=3906540  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 k  
Edition : 05.03.92  
Replaces : 08.06.90  
Test oil : ISO-4113

Combination no. : 9 400 230 102

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1050AJC2216  
R

Governer no. : 9 420 234 146

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 141.7  
Rated speed : 2100  
2nd version kW : ?

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

K20

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm3 : 4.00

1000 : (6.50)

2nd version

Speed rpm : 1100

Del.quantity cm3/ : 114.5...116.5

1000 s: (112.5...118.5)

Spread cm3 : 3.5

1000 s: (6.0)

## RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.10

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1160...1190

3rd rack travel in: 4.00

Speed rpm : 1160...1190

4th rack travel in: 1250

Speed rpm : 0.30...1.40

2nd version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.15

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 25...34

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 5.5

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 400

Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.10...11.20

2nd speed rpm : 750

Rack travel in m: 12.60...12.80

Torque control curve - 2nd version

1st speed rpm : 1100

Rack travel in m: 12.1...12.2

2nd speed rpm : 750

Rack travel in m: 13.4...13.6

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 126.0...130.0

1000 s: (124.0...132.0)

2nd version

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 135.0...138.0

1000 s: (132.5...140.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1090...1100

2nd version

1mm rack travel less than

full load rack tr: 11.15

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.90...6.10

Del.quantity cm<sup>3</sup>/ : 18.0...22.0

1000 s: (15.5...24.5)

Spread cm<sup>3</sup> : 6.00

1000 s: (8.00)

Remarks:

: 1.VERS= CDC #3915968

: 2.VERS= CDC #3908326

Adjust stop lever to 0.5...1.0 mm  
before stop.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA  
Edition : 10.03.92  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE4/10F210DL4-1  
Type number : 0 460 404 073

Customer-specific information  
Customer : VM

Engine : HR 425 CLIRS

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 1,2...1,6  
Shutoff  
electromagnet Volt: 12,0

Supply-pump pressure

Speed 1/min: 1000

K22

Charge press hPa: 1000  
Setting value bar: 4,7...5,3  
Shutoff  
electromagnet Volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 65,5...66,5

Shutoff  
electromagnet Volt: 12,0  
Dispersion cm3/: 3,0  
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 700  
Del. quantity cm3/  
1000S.: 43,0...44,0

Shutoff  
electromagnet Volt: 12,0

Low-idle speed regulation

Speed 1/min: 450  
Charge press hPa: -  
Del. quantity cm3/  
1000S.: 13,0...17,0

Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm3/: 3,0  
1000S.: -

Full-load speed regulation

Speed 1/min: 2300  
Charge press hPa: 1000  
Del. quantity cm3/  
1000S.: 40,0...46,0

Shutoff  
electromagnet Volt: 12,0

Start:

Speed 1/min: 100  
Charge press hPa: -  
Del. quantity cm3/: -  
mind 1000S.: 35,0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: -  
Inj.-qty. cm3/  
difference 1000S.: 7,0...9,0  
Shutoff  
electromagnet Volt: 12,0

SP press.-dif.measurement  
pompa di mandata (FP)  
1.Speed 1/min: 1500  
Charge press hPa: -  
Supply pump  
pressure  
difference bar: 0,1...0,3  
Shutoff  
electromagnet Volt: 12

Inspection pump test specifications  
Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1,2...1,6  
mm: (0,7...2,1)  
electromagnet Volt: 12,0  
2nd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 4,0...4,8  
mm: (3,7...5,1)  
Shutoff  
electromagnet Volt: 12,0  
3rd speed 1/min: 2100  
Charge press hPa: 1000  
TD travel mm: 7,0...7,8  
mm: (6,7...8,1)

Shutoff  
electromagnet Volt: 12,0

Supply pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 1000  
Supply pump  
pressure bar: 3,8...4,4  
Shutoff  
electromagnet Volt: 12,0  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply pump  
pressure bar: 4,7...5,3  
Shutoff  
electromagnet Volt: 12,0  
3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply pump  
pressure bar: 7,6...8,2  
Shutoff  
electromagnet Volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12,0

Overflow : 41,6...83,3  
quantity cm3/10s: (26,6...98,3)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12,0  
Overflow : 55,5...138,8  
quantity cm3/10s: (40,5...153,3)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 350  
LDA-stroke mm: 7,0  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm3/: 55,5...56,5  
1000s.: (53,5...58,5)  
2nd speed 1/min: 2500  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm3/: 0,0...8,0  
1000s.: -  
3rd speed 1/min: 2300  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm3/: 41,0...45,0  
1000s.: (39,0...47,0)  
4th speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm3/: 63,0...66,0  
1000s.: (61,5...67,5)  
5th speed 1/min: 1500  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm3/: 65,5...66,5  
1000s.: (64,0...68,0)  
6th speed 1/min: 700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm3/: 65,5...68,5  
1000s.: (64,0...70,0)  
7th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm3/: 43,0...44,0  
1000s.: (41,0...46,0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000S.: -

Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm<sup>3</sup>/: 13,0...17,0  
1000S.: (10,0...20,0)  
2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm<sup>3</sup>/: 2,5...7,5  
1000S.: (2,0...8,0)  
3rd speed 1/min: 600  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm<sup>3</sup>/: 0,0...5,0  
1000S.: -

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/: 13,0...19,0 \*  
difference 1000S.: -  
Shutoff  
electromagnet Volt: 12,0

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1500  
Charge press. hPa: -  
TD-travel : 1,4...1,6 \*  
Shutoff  
electromagnet Volt: 12,0

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12,0

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm<sup>3</sup>/: 42,5...44,5  
1000S.: (41,0...46,0)

Automatic starting fuel delivery:

1st speed 1/min: 400  
Charge press. hPa: -

Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm<sup>3</sup>/: 45,0...65,0  
1000S.: -

2nd speed 1/min: 550  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12,0  
Del. quantity cm<sup>3</sup>/: 25,0...45,0  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm: 3,2...3,4  
KF mm: 5,2...5,6  
MS mm: 0,6...1,0  
SVS max. mm: 4,3  
LDA stroke mm: 7,0

Ajustement Potentiometer:

Angle for  
pot. \*: 45  
Supply voltage  
pot. volt: 5,0  
Output volt  
pot. volt: 2,95

Remarks:  
Overflow restriction 0.55 mm - Part No.  
..303

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD  
Edition : 13.03.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 646 266AA  
  
Injection pump  
Pump designation : PE6A95D410LS2587  
EP type number : 0 410 696 983  
Governor  
Governor design. : RQV300...115DAB1088L  
Governor no. : 0 420 212 115

Customer-spec. information  
Customer : KHD

Engine : F6L413 FW

1st version kW : 92.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.65)  
Rack travel in mm : 9.00...12.00

K25

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.20...8.30

Del.quantity cm3/ : 7.3...7.4

100 s: (7.1...7.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.60

2nd speed rpm : 390  
travel mm : 2.20...2.60

3rd speed rpm : 1195  
travel mm : 8.70...9.10

4th speed rpm : 1245  
travel mm : 9.40...9.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 73.0...74.0

1000 : (71.0...76.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED



1st version  
Control lever  
position degrees: ?

Testing:  
1st rack travel in: 7.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: ?

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.40  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION  
Speed rpm : 300...420

TORQUE CONTROL  
Dimension a mm : 0.90  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 8.20...8.30  
2nd speed rpm : 800  
Rack travel in m: 9.10...9.30  
3rd speed rpm : 1000  
Rack travel in m: 8.60...8.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 74.5...77.5  
1000 s: (72.0...80.0)  
Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 64.5...69.5 \*  
1000 s: (62.0...72.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 64.5...69.5 \*  
1000 s: (62.0...72.0)  
Rack travel in mm : 10.4...10.6

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

\* Set warm-start quantity at  
excess-fuel stop for starting  
on governor housing  
APPLICATION

Below-ground operation

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 j 1  
 Edition : C3.04.92  
 Replaces : 11.91  
 Test oil : ISO-4113  
 Combination no. : 0 400 844 096  
 Injection pump  
 Pump designation : PES4A95D410RS2809  
 EP type number : 0 410 894 993  
 Governor  
 Governor design. : RQV300...1400AB1065-23L  
 Governor no. : 0 420 212 227

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 6.4...6.6

100 s: (6.2...6.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed - rpm : 300  
 travel mm : 0.80...1.30

2nd speed rpm : 500  
 travel mm : 2.30...2.80

3rd speed rpm : 750  
 travel mm : 4.10...4.30

4th speed rpm : 1500  
 travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 64.5...66.5

1000 : (62.5...68.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 111...119

Testing:  
1st rack travel in: 8.90  
Speed rpm : 1450...1460  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1670  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 73...81

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 300  
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION  
Speed rpm : 550...700

TORQUE CONTROL  
Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 9.90...10.00  
2nd speed rpm : 400  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 630  
Rack travel in m: 10.90...11.20  
4th speed rpm : 925  
Rack travel in m: 10.40...10.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 400  
Del.quantity cm3/ : 49.0...53.0  
1000 s: (46.5...55.5)  
Speed rpm : 630  
Del.quantity cm3/ : 49.0...53.0  
1000 s: (46.5...55.5)  
Speed rpm : 925  
Del.quantity cm3/ : 59.0...63.0  
1000 s: (56.5...65.5)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90  
Speed rpm : 1450...1460

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 14.40...14.80

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 y 1  
Edition : 13.03.92  
Replaces : 10.91  
Test oil : ISO-4113

Combination no. : 0 400 846 580

Injection pump  
Pump designation : PES6A95D32ORS2779  
EP type number : 0 410 896 903  
Governor  
Governor design. : RQV350...1350AB1248-1R  
Governor no. : 0 420 213 121

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA 360

1st version kW : 138.0  
Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 110

Opening  
pressure, bar : 250...253

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

L01

Prestroke mm : 2.45...2.55  
: (2.40...2.60)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 5.9...6.1  
Del.quantity cm3/ : 1.7...2.1  
100 s: (1.5...2.3)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 7.30...7.50  
2nd speed rpm : 1460  
travel mm : 8.10...8.50  
3rd speed rpm : 550  
travel mm : 3.10...3.70  
4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1350  
Aneroid pressure h: 900  
Del.quantity : 84.0...86.0  
1000 : (82.0...88.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1390...1420  
2nd rack travel in: 4.00  
Speed rpm : 1525...1535  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.9...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 215  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 345  
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 75.0...79.0  
1000 s: (73.0...81.0)

BREAKAWAY

L02

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...170.0  
1000 s: (125.0...175.0)  
Rack travel in mm : 20.60...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks: : NAVISTAR #1818796C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 s  
Edition : 13.03.92  
Replaces : 07.91  
Test oil : ISO-4113  
  
Combination no. : 0 400 846 582  
  
Injection pump  
Pump designation : PES6A95D320RS2796  
EP type number : 0 410 896 901  
Governor  
Governor design. : RQ300/1300AB1253-1R  
Governor no. : 0 420 201 650

Customer spec. information  
Customer : DAF

Engine : NS 156G

1st version kW : 156.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 770

Rack travel in mm : 7.50...8.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 770

Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1410...1440

4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100

Minimum rack travel: 7.70

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 545...585

#### TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 1290

Rack travel in m: 12.60...12.70

2nd speed rpm : 750

Rack travel in m: 14.20...14.80

3rd speed rpm : 960

Rack travel in m: 13.50...14.10

4th speed rpm : 1055

Rack travel in m: 12.90...13.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.80...11.00

2nd pressure hPa : 260

Rack travel in m: 12.30...12.40

3rd pressure hPa : 210

Rack travel in m: 11.30...11.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000

Speed rpm : 1290

Del.quantity cm<sup>3</sup>/ : 87.0...89.0

1000 s: (84.5...91.5)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 44.5...45.5

1000 s: (42.5...47.5)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1325...1340

#### LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Del.quantity cm<sup>3</sup>/ : 6.0...10.0

1000 s: (3.5...12.5)

Spread cm<sup>3</sup> : 3.50

1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 j 4  
 Edition : 03.04.92  
 Replaces : 03.91  
 Test oil : ISO-4113

Combination no. : 0 400 846 591

Injection pump  
 Pump designation : PES6A95D410RS2797  
 EP type number : 0 410 896 900  
 Governor  
 Governor design. : RQV300...1400AB1065-22L  
 Governor no. : 0 420 212 226

Customer spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 97.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 6.1...6.3  
 100 s: (5.9...6.5)

Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 8.9...9.1  
 Del.quantity cm3/ : 0.8...1.2  
 100 s: (0.5...1.4)

Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.80...1.30  
 2nd speed rpm : 500  
 travel mm : 2.30...2.80  
 3rd speed rpm : 750  
 travel mm : 4.10...4.30  
 4th speed rpm : 1500  
 travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1500  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1400  
 Del.quantity : 61.0...63.0  
 1000 : (59.0...65.0)

Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 109...117

Testing:  
1st rack travel in: 9.10  
Speed rpm : 1450...1460  
2nd rack travel in: 4.00  
Speed rpm : 1540...1570  
4th rack travel in: 1670  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.50  
Speed rpm : 300  
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION  
Speed rpm : 500...650

TORQUE CONTROL  
Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 400  
Rack travel in m: 11.30...11.60  
3rd speed rpm : 630  
Rack travel in m: 10.90...11.20  
4th speed rpm : 925  
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 49.0...52.0  
1000 s: (46.5...54.5)  
Speed rpm : 630  
Del.quantity cm<sup>3</sup>/ : 49.0...53.0  
1000 s: (46.5...55.5)  
Speed rpm : 925  
Del.quantity cm<sup>3</sup>/ : 57.0...61.0  
1000 s: (54.5...63.5)

BREAKAWAY

1st version

L06

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 14.60...15.00

Remarks:

:  
Set shutoff stop to contact at  
3.0...3.5 mm control-rod travel.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 5,9 e  
 Edition : 20.03.92  
 Replaces : 11.91  
 Test oil : ISO-4113

Combination no. : 0 400 846 597

Injection pump  
 Pump designation : PES6A90D410RS2813  
 EP type number : 0 410 896 039  
 Governor  
 Governor design. : RQV300...1250AB1264-L  
 Governor no. : 0 420 212 233

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8065.25.000

1st version kW : 145.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 7.9...8.0  
 100 s: (7.7...8.2)

Spread cm3 : 0.3  
 100 s: (0.5)

2nd speed rpm : 325.0  
 Rack travel in mm : 8.6...8.8  
 Del.quantity cm3/ : 1.3...1.7  
 100 s: (1.1...1.9)

Spread cm3 : 0.2  
 100 s: (0.4)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.60...1.10

2nd speed rpm : 445  
 travel mm : 2.20...2.70

3rd speed rpm : 540  
 travel mm : 2.80...3.30

4th speed rpm : 897  
 travel mm : 5.00...5.50

5th speed rpm : 1324  
 travel mm : 8.00...8.50

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1455

Rack travel in mm : 9.60...12.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 700  
 Del.quantity : 79.0...80.0  
 1000 : (77.0...82.0)

Spread cm3 : 3.00  
1000 : (5.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 101...109

#### Testing:

1st rack travel in: 10.70  
Speed rpm : 1310...1320  
2nd rack travel in: 4.00  
Speed rpm : 1415...1445  
4th rack travel in: 1510  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 75...83

#### Testing:

Speed rpm : 225  
Minimum rack travel: 12.10  
Speed rpm : 325  
Rack travel in mm : 8.60...8.80

#### CONSTANT REGULATION

Speed rpm : 350...450

#### TORQUE CONTROL

Dimension a mm : 1.60  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 400  
Rack travel in m: 13.30...13.40  
3rd speed rpm : 700  
Rack travel in m: 12.60...12.80  
4th speed rpm : 915  
Rack travel in m: 12.10...12.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 400  
Pressure hPa : 700  
Rack travel mm : 12.90...13.00

#### Measurement

Speed 1/min : 400

1st pressure hPa : -  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 315  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 280

Rack travel in m: 12.20...12.40

#### START CUT-OUT

Speed 1/min : 220 (250)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm3/ : 81.0...83.0  
1000 s: (78.5...85.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 51.0...52.0  
1000 s: (49.0...54.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1310...1320

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 z 1  
 Edition : 13.03.92  
 Replaces : 11.91  
 Test oil : ISO-4113

Combination no. : 0 400 846 603

Injection pump  
 Pump designation : PES6A95D320RS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1350AB1251-1R  
 Governor no. : 0 420 213 125

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 142.0  
 Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

LD9

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350

---

Rack travel in mm : 12.30...12.40

---

Del.quantity cm3/ : 8.4...8.6  
 100 s: (8.2...8.8)

---

Spread cm3 : 0.3  
 100 s: (0.6)

---

2nd speed rpm : 350.0  
 Rack travel in mm : 5.8...6.0  
 Del.quantity cm3/ : 1.7...2.1  
 100 s: (1.4...2.3)

---

Spread cm3 : 0.3  
 100 s: (0.5)

---

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 7.30...7.50

2nd speed rpm : 1460  
 travel mm : 8.10...8.50

3rd speed rpm : 550  
 travel mm : 3.10...3.70

4th speed rpm : 350  
 travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1350  
 Aneroid pressure h: 900  
 Del.quantity : 84.0...86.0  
 1000 : (82.0...88.0)

---

Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1390...1420  
2nd rack travel in: 4.00  
Speed rpm : 1525...1535  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION  
Speed rpm : 350...500

TORQUE CONTROL  
Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 1350  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 850  
Rack travel in m: 13.10...13.20  
3rd speed rpm : 1200  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 265  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 560  
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

L10

1st version  
Aneroid pressure h: 900  
Speed rpm : 850  
Del.quantity cm3/ : 96.0...100.0  
1000 s: (94.0...102.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 60.5...64.5  
1000 s: (58.5...66.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #1818798C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 y 2  
 Edition : 13.03.92  
 Replaces : 11.91  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 604  
 Injection pump  
 Pump designation : PES6A95D32ORS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1350AB1248-2R  
 Governor no. : 0 420 213 126  
 Customer-spec. information  
 Customer : NAVISTAR  
 Engine : DT 360  
 1st version kW : 127.0  
 Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 038  
 Inlet press., bar : 2.80  
 Test nozzle holder  
 assembly : 1 688 901 110  
 Opening  
 pressure, bar : 250...253  
 Orifice plate  
 diameter mm : 0,5  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350  
 Rack travel in mm : 11.90...12.00  
 Del. quantity cm<sup>3</sup>/ : 7.9...8.1  
 100 s : (7.7...8.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)  
 2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.1  
 100 s : (1.4...2.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

## (B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 7.30...7.50  
 2nd speed rpm : 1460  
 travel mm : 8.10...8.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1350  
 Aneroid pressure h: 900  
 Del. quantity : 79.5...81.5  
 1000 : (77.5...83.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1390...1420  
2nd rack travel in: 4.00  
Speed rpm : 1525...1535  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.90...12.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 110  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 300  
Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 71.0...75.0  
1000 s: (69.0...77.0)

BREAKAWAY

L12

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #1819273C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC  
Edition : 13.03.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 846 606  
Injection pump  
Pump designation : PES6A95D32ORS2779  
EP type number : 0 410 896 903  
Governor  
Governor design. : RQV350...1200AB1236-8R  
Governor no. : 0 420 213 127

Customer-spec. information  
Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 110

Opening  
pressure, bar : 250...253

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75  
: (2.60...2.80)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 5.9...6.1  
Del.quantity cm3/ : 1.7...2.1  
100 s: (1.5...2.3)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
travel mm : 8.60...9.00  
2nd speed rpm : 1250  
travel mm : 7.30...7.50  
3rd speed rpm : 550  
travel mm : 3.10...3.70  
4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 900  
Del.quantity : 99.0...101.0  
1000 : (97.0...103.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 12.30  
Speed rpm : 1230...1260  
2nd rack travel in: 4.00  
Speed rpm : 1375...1385  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.30...13.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 225  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 460  
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 74.5...78.5  
1000 s: (72.5...80.5)

BREAKAWAY

L14

1st version  
1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 1230...1260

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...170.0  
1000 s: (125.0...175.0)  
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #1819325C9?

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 13.03.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 846 608  
  
Injection pump  
Pump designation : PES6A95D32ORS2796  
EP type number : 0 410 896 901  
Governor  
Governor design. : RQ300/1300AB1253-3R  
Governor no. : 0 420 201 654

Customer-spec. information  
Customer : DAF

Engine : NS 156G

1st version kW : 156.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 770

Rack travel in mm : 7.50...8.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 770

Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1410...1440

4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 525...565

#### TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 750  
Rack travel in m: 14.20...14.80  
3rd speed rpm : 960  
Rack travel in m: 13.50...14.10  
4th speed rpm : 1055  
Rack travel in m: 12.90...13.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 250  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 90  
Rack travel in m: 11.20...11.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1290  
Del.quantity cm3/ : 87.0...89.0  
1000 s: (84.5...91.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 45.5...46.5  
1000 s: (43.5...48.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1325...1340

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MM 4,1 b 5  
Edition : 20.03.92  
Replaces : 02.91  
Test oil : ISO-4113

Combination no. : 0 400 864 084

Injection pump  
Pump designation : PES4A90D320/3RS2659  
EP type number : 0 410 894 028  
Governor  
Governor design. : RSV325...125UADC2182  
-8R

Governer no. : 0 420 233 277

Customer-spec. information  
Customer : MM

Engine : D226B-4

1st version kW : 74.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00  
Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 350.0  
Rack travel in mm : 7.2...7.4  
Del.quantity cm<sup>3</sup>/ : 1.2...1.6  
100 s: (1.0...1.8)  
Spread cm<sup>3</sup> : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1175  
Aneroid pressure h: 700  
Del.quantity : 80.5...82.5  
1000 : (78.5...84.5)  
Spread cm<sup>3</sup> : 3.00  
1000 : (5.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 85...93

#### Testing:

1st rack travel in: 9.80  
Speed rpm : 1215...1225  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
3rd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 58...66  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 510...570

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 800  
Rack travel in m: 12.30...12.40  
4th speed rpm : 1000  
Rack travel in m: 11.50...11.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.30...12.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 215  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 300  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 94.0...96.0  
1000 s: (91.5...98.5)  
Aneroid pressure h: 215  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 78.0...80.0  
1000 s: (75.5...82.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 68.0...69.0  
1000 s: (66.0...71.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.20...7.40  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (10.0...18.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (4.50)

#### Remarks:

: FENDT

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a69  
Edition : 13.03.92  
Replaces : 09.89  
Test oil : ISO-4113

Combination no. : 0 400 866 146

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100AUC2190  
-36R  
Governor no. : 0 420 233 243

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 138.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 10.7...10.9

100 s: (10.5...11.1)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 750.0  
Rack travel in mm : 12.6...12.8  
Del.quantity cm3/ : 12.5...12.9  
100 s: (12.3...13.1)

Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 107.5...109.5  
1000 : (105.5...111.5)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 10.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1225...1235  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 14.5...18.5  
1000 s: (12.0...21.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915952

Adjust stop lever to 0.5...1.0 mm  
before stop.

L20

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 L 8  
 Edition : 13.03.92  
 Replaces : 07.91  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 150  
 Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -45R  
 Governor no. : 0 420 233 253

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 134.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 375.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm3/ : 2.1...2.5  
 100 s: (1.8...2.7)

Spread cm3 : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 106.5...108.5

1000 : (104.5...110.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00



Speed rpm : 1230...1240  
3rd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 375  
Rack travel in mm : 5.90...6.10

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 119.5...123.5  
1000 s: (117.5...125.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 21.0...25.0  
1000 s: (18.5...27.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915974

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 03.04.92  
Replaces : 02.92  
Test oil : ISO-4113  
  
Combination no. : 0 400 866 175  
  
Injection pump  
Pump designation : PES6A90D320/3RS2660  
EP type number : 0 410 896 078  
Governor  
Governor design. : RSV325...1175A0C2247  
-2R  
Governor no. : 0 420 233 290  
  
Customer-spec. information  
Customer : MWM  
  
Engine : TD226-B6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 014  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600  
  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values —

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1175  
Rack travel in mm : 11.10...11.20  
Del.quantity cm3/ : 8.3...8.4  
100 s: (8.1...8.6)  
Spread cm3 : 0.3  
100 s: (0.5)  
  
2nd speed rpm : 350.0  
Rack travel in mm : 6.8...7.0  
Del.quantity cm3/ : 1.0...1.6  
100 s: (0.8...1.8)  
Spread cm3 : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1175  
Aneroid pressure h: 700  
Del.quantity : 83.0...84.0  
1000 : (81.0...86.0)  
Spread cm3 : 3.00  
1000 : (5.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 94...102

#### Testing:

1st rack travel in: 10.10  
Speed rpm : 1215...1225  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
3rd rack travel in: 4.00  
Speed rpm : 1295...1325  
4th rack travel in: 1430  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 530...590

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 500  
Rack travel in m: 11.80...11.90  
3rd speed rpm : 800  
Rack travel in m: 11.70...11.90  
4th speed rpm : 960  
Rack travel in m: 11.40...11.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.80...11.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 320  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 255  
Rack travel in m: 11.20...11.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

L24

Aneroid pressure h: 700  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 80.5...82.5  
1000 s: (78.0...85.0)  
Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 85.0...88.0  
1000 s: (82.5...90.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 66.0...67.0  
1000 s: (64.0...69.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

: RENAULT

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 03.04.92  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 874 252

Injection pump  
 Pump designation : PES4A95D410RS2809-1  
 EP type number : 0 410 894 992  
 Governor  
 Governor design. : RSV350...1400AOC2006  
 -7L  
 Governor no. : 0 420 232 575

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM364

1st version kW : 65.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1380

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 6.4...6.6  
 100 s: (6.2...6.8)

Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 8.0...8.4  
 Del.quantity cm3/ : 1.0...1.4  
 100 s: (0.7...1.6)

Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1380  
 Del.quantity : 64.5...66.5  
 1000 : (62.5...68.5)

Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 109...117

Testing:  
 1st rack travel in: 9.40  
 Speed rpm : 1433...1438  
 2nd rack travel in: 4.00  
 Speed rpm : 1491...1508  
 4th rack travel in: 1575  
 Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 8.2

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 8.00...8.40  
Rack travel in mm : 2.00  
Speed rpm : 490...550

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1380  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 400  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 900  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 400  
Del.quantity cm3/ : 48.0...51.0  
1000 s: (45.5...53.5)  
Spread cm3 : -  
1000 s: (5.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 16.30...16.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.00...8.40  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 d 8  
Edition : 13.03.92  
Replaces : 09.91  
Test oil : ISO-4113

Combination no. : 0 400 876 381

Injection pump  
Pump designation : PES6A100D410RS2762-1  
EP type number : 0 410 806 008  
Governor  
Governor design. : RSV425...1050AOC2252  
-1L  
Governor no. : 0 420 232 571

Customer spec. information  
Customer : JOHN DEERE

Engine : 6076TRW-30

1st version kW : 131.5  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

L27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.3...5.5

Del.quantity cm<sup>3</sup>/ : 2.1...2.5

100 s: (1.9...2.7)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.30  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1165...1175  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.30...5.50

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 750  
Rack travel in m: 13.10...13.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 134.5...138.5  
1000 s: (132.5...140.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 21.5...25.5  
1000 s: (19.5...27.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE41833  
Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 500 1/min.

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 d 6  
Edition : 13.03.92  
Replaces : 06.91  
Test oil : ISO-4113

Combination no. : 0 400 876 383

Injection pump  
Pump designation : PES6A100D410RS2762-1  
EP type number : 0 410 806 008  
Governor  
Governor design. : RSV400...1100A2C2204  
-8L  
Governor no. : 0 420 232 551

Customer spec. information  
Customer : JOHN DEERE

Engine : 6076TDW02

1st version kW : 128.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 190...200

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
(2.90...3.10)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.9...3.3

100 s: (2.7...3.5)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version



Control lever  
position degrees: 40...48

Testing:

1st rack travel in: 9.70  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 650  
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 134.0...138.0  
1000 s: (132.0...140.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400

M02

Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 29.0...33.0  
1000 s: (27.0...35.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47356  
Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 d 7  
Edition : 13.03.92  
Replaces : 02.92  
Test oil : ISO-4113

Combination no. : 0 400 876 391

Injection pump  
Pump designation : PES6A100D410RS2762-1  
EP type number : 0 410 806 008  
Governor  
Governor design. : RSV425...1100A2C2225  
-5L  
Governor no. : 0 420 232 566

Customer spec. information  
Customer : JOHN DEERE

Engine : 6076ARW-09

1st version kW : 145.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness : 6.00X2.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

MO3

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.6...3.0

100 s: (2.4...3.2)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

#### Testing:

1st rack travel in: 10.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 750  
Rack travel in m: 13.90...14.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

#### Measurement

Speed 1/min : 500

#### 1st pressure hPa : -

Rack travel in m: 11.70...11.90  
2nd pressure hPa : 535  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 720  
Rack travel in m: 13.40...13.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 143.5...147.5  
1000 s: (141.5...149.5)  
Aneroid pressure h: -  
Speed rpm : 500

MD4

Del.quantity cm<sup>3</sup>/ : 129.0...133.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE47502

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

The stop position of the control rod  
must be easily reached with the stop  
lever

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : AIF  
Edition : 20.03.92  
Replaces : 01.92  
Test oil : ISO-4113  
  
Combination no. : 0 400 876 393  
  
Injection pump  
Pump designation : PES6A90D410RS2723  
EP type number : 0 410 896 085  
Governor  
Governor design. : RSV300...1350A0C2257  
L  
Governor no. : 0 420 232 568

Customer-spec. information  
Customer : IVECO-AIFO

Engine : 8061.SRM 25

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 014  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 2.20...2.30  
: (2.15...2.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350  
Rack travel in mm : 13.60...13.70  
Del.quantity cm<sup>3</sup>/ : 10.9...11.0  
100 s: (10.7...11.2)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.4)

2nd speed rpm : 300.0  
Rack travel in mm : 9.0...9.2  
Del.quantity cm<sup>3</sup>/ : 2.3...2.7  
100 s: (2.1...2.9)  
Spread cm<sup>3</sup> : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1350  
Del.quantity : 109.0...110.0  
1000 : (107.0...112.0)  
Spread cm<sup>3</sup> : 3.00  
1000 : (4.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 100...108

Testing:  
1st rack travel in: 12.70  
Speed rpm : 1390...1400  
2nd rack travel in: 4.00  
Speed rpm : 1595...1625  
4th rack travel in: 1700  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 525...585

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1350

Rack travel in m: 13.60...13.70

2nd speed rpm : 500

Rack travel in m: 13.60...13.80

5th speed rpm : 350

Rack travel in m: 15.10...15.30

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 98.0...100.0

1000 s: (95.5...102.5)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1390...1400

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 17.20...17.60

Remarks:

:

Test electrically-released starting  
quantity (EES) with 12 volts

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 w 6  
Edition : 13.03.92  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 400 876 394

Injection pump  
Pump designation : PES6A100D410RS2754  
EP type number : 0 410 806 002  
Governor  
Governor design. : RSV425...1100AOC2234  
-2L  
Governor no. : 0 420 232 569

Customer spec. information  
Customer : JOHN DEERE

Engine : 6076TRW04

1st version kW : 122.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

M07

Prestroke mm : 2.95...3.05  
(2.90...3.10)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del. quantity cm<sup>3</sup>/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 2.6...3.0  
100 s: (2.4...3.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 9.60  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
3rd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.50...5.70

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 700  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 125.0...128.0  
1000 s: (122.5...130.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE51026  
Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 500 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 13.03.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 876 395  
  
Injection pump  
Pump designation : PES6A100D410RS2676  
EP type number : 9 410 230 023  
Governor  
Governor design. : RSV425...1100A2C2161  
-1L  
Governor no. : 9 420 234 133

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

M09

Prestroke mm : 2.45...2.55  
: (2.40...2.60)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm<sup>3</sup>/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.3...5.5

Del.quantity cm<sup>3</sup>/ : 2.0...2.4

100 s: (1.8...2.6)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 98.5...100.5

1000 : (96.5...102.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control Lever

position degrees: 46...54



#### Testing:

1st rack travel in: 8.40  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.30...5.50

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.40...9.40  
2nd speed rpm : 750  
Rack travel in m: 10.60...10.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.60...10.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 80  
Rack travel in m: 9.40...9.80  
3rd pressure hPa : 175  
Rack travel in m: 10.30...10.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 116.0...119.0  
1000 s: (114.0...121.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 86.0...90.0  
1000 s: (84.0...92.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (185.0...215.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 20.5...24.5  
1000 s: (18.5...26.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE23746

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC  
Edition : 13.03.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 876 396  
Injection pump  
Pump designation : PES6A95D32ORS2779  
EP type number : 0 410 896 903  
Governor  
Governor design. : RSV350...1250A5C2258  
R  
Governor no. : 0 420 233 292

Customer-spec. information  
Customer : NAVISTAR

Engine : DT 466

1st version kW : 142.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 110

Opening  
pressure, bar : 250...253

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness : 6.00X2.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
: (2.40...2.60)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  
Rack travel in mm : 13.40...13.50  
Del.quantity cm<sup>3</sup>/ : 9.7...9.9  
100 s : (9.5...10.1)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 5.2...5.4  
Del.quantity cm<sup>3</sup>/ : 1.1...1.5  
100 s : (0.9...1.8)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : ?  
Rack travel in mm : ?

Governor spring pre-tension  
Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Aneroid pressure h: 900  
Del.quantity : 97.0...99.0  
1000 : (95.0...101.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 52...60

### Testing:

1st rack travel in: 12.40  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1355...1365  
3rd rack travel in: 4.00  
Speed rpm : 1360...1370  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

### CONSTANT REGULATION

Speed rpm : 350...500

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.40...13.50

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.30...9.50  
2nd pressure hPa : 340  
Rack travel in m: 10.50...10.60  
3rd pressure hPa : 555  
Rack travel in m: 12.30...12.70

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 66.0...70.0  
1000 s: (64.0...72.0)

### BREAKAWAY

### 1st version

M12

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1290...1300

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 11.5...15.5  
1000 s: (9.0...18.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

### Remarks:

: NAVISTAR #1818556C91  
Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 03.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 397  
 Injection pump  
 Pump designation : PES6A95D410RS2797  
 EP type number : 0 410 896 900  
 Governor  
 Governor design. : RSV350...1400A0C2006  
 -8L  
 Governor no. : 0 420 232 580

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 100.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1380

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 6.1...6.3

100 s: (5.9...6.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1380

Del.quantity : 61.0...63.0

1000 : (59.0...65.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 107...115

Testing:

1st rack travel in: 9.70

Speed rpm : 1430...1435

2nd rack travel in: 4.00

Speed rpm : 1490...1507

4th rack travel in: 1650

Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 8.1

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 8.00...8.20

Rack travel in mm : 2.00

Speed rpm : 480...540

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1380

Rack travel in m: 10.10...10.20

2nd speed rpm : 400

Rack travel in m: 11.30...11.60

3rd speed rpm : 630

Rack travel in m: 10.90...11.20

4th speed rpm : 925

Rack travel in m: 10.40...10.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 400

Del.quantity cm3/ : 49.0...52.0

1000 s: (46.5...54.5)

Speed rpm : 630

Del.quantity cm3/ : 49.0...53.0

1000 s: (46.5...55.5)

Speed rpm : 925

Del.quantity cm3/ : 57.0...61.0

1000 s: (54.5...63.5)

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 14.60...15.00

#### LOW IDLE

Speed rpm : 350

Rack travel in mm : 8.00...8.20

Del.quantity cm3/ : 6.0...10.0

1000 s: (3.5...12.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 f  
 Edition : 13.03.92  
 Replaces : 10.91  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 891  
 Injection pump  
 Pump designation : PE6P120A720RS3216  
 EP type number : 0 411 826 781  
 Governor  
 Governor design. : RQV300...975PA898K  
 Governor no. : 0 421 815 197

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8210.42.269

1st version kW : 261.0  
 Rated speed : 1950

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.6

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...2.00

2nd speed rpm : 400

travel mm : 3.20...4.00

3rd speed rpm : 750

travel mm : 6.70...7.10

4th speed rpm : 975

travel mm : 9.60...9.80

5th speed rpm : 1200

travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1015

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 1200

Del.quantity : 235.0...237.0  
1000 : (232.0...240.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 71...79

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION  
Speed rpm : 280...400

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 830  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 500  
Rack travel in m: 11.30...11.50  
4th speed rpm : 350  
Rack travel in m: 11.20...11.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 975  
Pressure hPa : 1200  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 975

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 600

M16

Rack travel in m: 11.40...11.50  
3rd pressure hPa : 400  
Rack travel in m: 10.10...10.30

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 500  
Del.quantity cm3/ : 188.0...194.0  
1000 s: (185.0...197.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1015...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAE 12,0 a  
Edition : 27.03.92  
Replaces : 01.92  
Test oil : ISO-4113

Combination no. : 0 401 846 933

Injection pump  
Pump designation : PE6P110A320RS3260  
EP type number : 0 411 816 775  
Governor  
Governor design. : RQ250, 1050PA969  
Governor no. : 0 421 801 538

Customer-spec. information  
Customer : HAEP

Engine : X6130 NA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1035

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 13.0...13.3

100 s: (12.7...13.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del.quantity cm3/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 500

Rack travel in mm : 12.60...14.20

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1035

Del.quantity : 130.0...133.0

1000 : (127.5...135.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 13.4

## Testing:

1st rack travel in: 10.40

Speed rpm : 1085...1100

2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1250

Speed rpm : 0.00...1.80

## LOW IDLE 1



Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 7.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.30  
Speed rpm : 250  
Rack travel in mm : 7.70...7.90  
Rack travel in mm : 2.00  
Speed rpm : 295...335

#### TORQUE CONTROL

Dimension @ mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1035  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 600  
Rack travel in m: 12.00...12.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 129.0...134.0  
1000 s: (126.0...137.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1085...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...204.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.60...8.00  
Del.quantity cm3/ : 15.0...20.0  
1000 s: (12.5...22.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAE  
Edition : 27.03.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 856 706

Injection pump  
Pump designation : PE6P110A721RS3101  
EP type number : 0 411 816 725  
Governor  
Governor design. : RQ300/1200PA412  
Governor no. : 0 421 801 172

Customer-spec. information  
Customer : HAEP

Engine : WD615.67

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.60

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 162.0...164.0

1000 : (159.0...167.0)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

### Testing:

1st rack travel in: 11.00

Speed rpm : 1245...1260

2nd rack travel in: 4.00

Speed rpm : 1325...1355

4th rack travel in: 1450

Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 405...445

#### TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 12.00...12.10

2nd speed rpm : 600

Rack travel in m: 12.60...12.90

3rd speed rpm : 985

Rack travel in m: 12.40...12.60

4th speed rpm : 1075

Rack travel in m: 12.20...12.40

#### Aneroid/Altitude

#### Compensator Test

#### 1st version

#### Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 12.40...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.50...9.70

2nd pressure hPa : 420

Rack travel in m: 11.50...11.60

3rd pressure hPa : 330

Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm3/ : 165.0...169.0

1000 s: (163.0...171.0)

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/ : 112.0...114.0

1000 s: (109.5...116.5)

#### BREAKAWAY

M20

#### 1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1245...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 205.0...235.0

1000 s: (201.0...239.0)

Rack travel in mm : 17.30...17.70

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE  
Edition : 03.04.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 791  
Injection pump  
Pump designation : PE6P110A320LS3859  
EP type number : 0 411 816 784  
Governor  
Governor design. : RSV400...900P1A554  
Governor no. : 0 421 833 376

Customer-spec. information  
Customer : LIEBHERR

Engine : D 9306 TI

1st version kW : 230.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness : 8.00X2.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 3- 5- 2- 4

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.9...2.4

100 s: (1.6...2.6)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 183.0...185.0

1000 : (180.5...187.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 96...102

Testing:

1st rack travel in: 13.10

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1080...1110  
3rd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1260  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 74...80  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 450...510

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : 1200  
Rack travel mm : 14.10...14.20

#### Measurement

Speed 1/min : 550

1st pressure hPa : -  
Rack travel in m: 13.00...13.20  
2nd pressure hPa : 525  
Rack travel in m: 13.80...13.90  
3rd pressure hPa : 475  
Rack travel in m: 13.30...13.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 160.0...162.0  
1000 s: (157.5...164.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 19.0...24.0  
1000 s: (16.5...26.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a42  
 Edition : 27.03.92  
 Replaces : 06.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 081  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1000PA813-16  
 Governor no. : 0 421 801 531

Customer spec. information  
 Customer : MAN

Engine : D2866LF 04..LH01

1st version kW : 221.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.30...10.40

Del.quantity cm<sup>3</sup>/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.20  
Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 355...395

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 10.90...11.10  
3rd speed rpm : 850  
Rack travel in m: 10.50...10.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.30...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 160  
Rack travel in m: 9.70...10.00

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1000

Del.quantity cm<sup>3</sup>/ : 191.0...197.0  
1000 s: (188.0...200.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 176.0...182.0  
1000 s: (173.0...185.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7053

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11.9 u1  
Edition : 13.03.92  
Replaces : 09.91  
Test oil : ISO-4113

Combination no. : 0 402 036 740

Injection pump  
Pump designation : PES6P120A720/3LS3255  
EP type number : 0 412 026 739  
Governor  
Governor design. : RQ300/1000PA813-13  
Governor no. : 0 421 801 529

Customer-spec. information  
Customer : MAN

Engine : D2866LF03

1st version kW : 273.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 14.50...15.50  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.9...5.3  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 242.0...244.0  
1000 : (239.0...247.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80



Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 15.00...15.10  
2nd speed rpm : 700  
Rack travel in m: 15.30...15.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 470  
Rack travel in m: 13.70...14.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1000  
Del.quantity cm3/ : 243.0...247.0  
1000 s: (240.0...250.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 0-7050  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 u6  
Edition : 7.4.92  
Replaces : 27.02.91  
Test oil : ISO-4113

Combination no. : 0 402 036 744

Injection pump  
Pump designation : PES6P120A720/3LS3255  
EP type number : 0 412 026 739  
Governor  
Governor design. : RQV300...1000PA876-12  
Governor no. : 0 421 813 897

Customer-spec. information  
Customer : MAN

Engine : D2866LF05

1st version kW : 272.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

M27

Prestroke mm : 3.70...3.80  
                  : (3.65...3.85)  
Rack travel in mm : 14.50...15.50  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.10...15.20

Del.quantity cm3/ : 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
travel mm : 9.70...9.90

2nd speed rpm : 300  
travel mm : 0.90...1.30

3rd speed rpm : 550  
travel mm : 3.70...4.30

4th speed rpm : 800  
travel mm : 6.60...7.00

5th speed rpm : 1300  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 244.0...246.0  
1000 : (241.0...249.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 298...306

Testing:

1st rack travel in: 14.10  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 254...262

Testing:

Speed rpm : 200  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 280...400

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.10...15.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 470  
Rack travel in m: 13.60...14.00

START CUT-OUT

M28

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1000  
Del.quantity cm3/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.10  
Speed rpm : 1040...1050

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.20  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7039

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 r  
Edition : 03.04.92  
Replaces : 08.91  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 829  
  
Injection pump  
Pump designation : PES6P120A320RS3284  
EP type number : 0 412 026 749  
Governor  
Governor design. : RQV275...1050PA995-1  
Governor no. : 0 421 813 941

Customer-spec. information  
Customer : RVI

Engine : M1DR 062045 3/3

1st version kW : 186.0  
Rated speed : 2100

## TEST BENCH REQUIPEMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.50...10.60

Del.quantity cm<sup>3</sup>/ : 14.8...15.0

100 s: (14.5...15.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.3

Del.quantity cm<sup>3</sup>/ : 2.2...2.6

100 s: (1.9...2.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1130  
travel mm : 8.10...8.30

2nd speed rpm : 275  
travel mm : 0.70...0.90

3rd speed rpm : 450  
travel mm : 2.80...3.40

4th speed rpm : 750  
travel mm : 5.50...5.90

5th speed rpm : 1450  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 9.20...11.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 148.0...150.0

1000 : (145.0...153.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

#### Testing:

1st rack travel in: 9.50  
Speed rpm : 1125...1135  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 243...251

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.80  
Speed rpm : 275  
Rack travel in mm : 5.30...5.50

#### CONSTANT REGULATION

Speed rpm : 340...440

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.50...10.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.20  
2nd pressure hPa : 240  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 130  
Rack travel in m: 9.40...9.60

#### START CUT-OUT

Speed 1/min : 210 (230)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1050

NO2

Del.quantity cm3/ : 144.0...150.0  
1000 s: (141.0...153.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 101.0...103.0  
1000 s: (98.0...106.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1125...1135

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...190.0  
1000 s: (156.0...194.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.20...5.60  
Del.quantity cm3/ : 22.0...26.0  
1000 s: (19.0...29.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 14,9 g  
Edition : 06.07.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 048 703  
Injection pump  
Pump designation : PES8P120A32ORS3175  
EP type number : 0 412 028 703  
Governor  
Governor design. : RQ750PA804  
Governor no. : 0 421 801 351

Customer-spec. information  
Customer : RVI

Engine : MIVS(R)083530

1st version kW : 320.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

N03

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 8- 4- 2- 7- 3-  
6- 5

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 12.40...12.50  
Del.quantity cm3/ : 27.9...28.1  
100 s: (27.6...28.4)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 4.4...4.8  
Del.quantity cm3/ : 1.5...2.1  
100 s: (1.2...2.4)  
Spread cm3 : 0.8  
100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 279.0...281.0  
1000 : (276.0...284.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: ?

Testing:  
1st rack travel in: 11.40  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 782...795  
4th rack travel in: 900  
Speed rpm : 0.00...1.00

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 750...755

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIN  
Edition : 13.03.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 048 707  
Injection pump  
Pump designation : PES8P120A32ORS3300  
EP type number : 0 412 028 707  
Governor  
Governor design. : RQV350...1400PA1028  
Governor no. : 0 421 813 987

Customer-spec. information  
Customer : FINCANTIERI

Engine : 1308 V

1st version kW : 500.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
(3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 2- 7- 8- 4- 5-  
6- 3

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1350  
Rack travel in mm : 14.20...14.30  
Del.quantity cm3/ : 27.5...27.7  
100 s: (27.2...28.0)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 6.7...6.9  
Del.quantity cm3/ : 3.6...4.2  
100 s: (3.3...4.5)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1410  
travel mm : 8.90...9.10  
2nd speed rpm : 350  
travel mm : 1.40...1.80  
3rd speed rpm : 520  
travel mm : 3.20...3.80  
4th speed rpm : 910  
travel mm : 5.20...5.60  
5th speed rpm : 1650  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1415  
Rack travel in mm : 12.90...15.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1350  
Aneroid pressure h: 1000



Del.quantity : 275.0...277.0  
1000 : (272.0...280.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

#### Testing:

1st rack travel in: 13.20  
Speed rpm : 1380...1390  
2nd rack travel in: 4.00  
Speed rpm : 1545...1575  
4th rack travel in: 1650  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 67...75  
Speed rpm : 350  
Rack travel in mm : 6.70...6.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 14.20...14.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.40  
2nd pressure hPa : 500  
Rack travel in m: 12.90...13.10  
3rd pressure hPa : 370  
Rack travel in m: 10.30...10.70

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 291.0...297.0  
1000 s: (288.0...300.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 138.0...140.0  
1000 s: (135.0...143.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1380...1390

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 435.0...465.0  
1000 s: (431.0...469.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 36.0...42.0  
1000 s: (33.0...45.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

APPLICATION :

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y  
Edition : 13.03.92  
Replaces : 12.91  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 723  
  
Injection pump  
Pump designation : PES6P120A72ORS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV400...1100P2A534-  
1  
Governor no. : 0 421 833 276

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076 AF & HF

1st version kW : 187.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X3.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

NO7

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 15.2...15.4

100 s : (15.0...15.6)

Spread cm3 : 0.4

100 s : (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.5...5.7  
Del.quantity cm3/ : 2.5...2.9  
100 s : (2.3...3.2)  
Spread cm3 : 0.6  
100 s : (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del.quantity : 152.0...154.0  
1000 : (150.0...156.0)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 11.00  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1225...1235  
3rd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 650  
Rack travel in m: 13.20...13.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 740  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 955  
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm3/ : 184.0...188.0  
1000 s: (182.0...190.0)  
Aneroid pressure h: -  
Speed rpm : 800

N08

Del.quantity cm3/ : 118.0...122.0  
1000 s: (116.0...124.0)

BREAKAWAY

1st version,  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 25.5...29.5  
1000 s: (23.0...32.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 2  
Edition : 13.03.92  
Replaces : 02.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 742  
  
Injection pump  
Pump designation : PES6P120A720RS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV400...1050P2A534-  
7  
Governor no. : 0 421 833 356

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076 H2030

1st version kW : 193.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X3.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

N09

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 15.7...15.9

100 s: (15.5...16.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0  
Rack travel in mm : 6.7...6.9  
Del.quantity cm3/ : 3.9...4.3  
100 s: (3.6...4.5)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 900  
Del.quantity : 157.5...159.5  
1000 : (155.5...161.5)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 11.30  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
3rd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.70...6.90

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 700  
Rack travel in m: 13.70...13.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 390  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 605  
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 192.0...196.0  
1000 s: (190.0...198.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm3/ : 116.5...120.5  
1000 s: (114.5...122.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 39.0...43.0  
1000 s: (36.5...45.5)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE47549

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 3  
Edition : 13.03.92  
Replaces : 02.92  
Test oil : ISO-4113

Combination no. : 0 402 076 743

Injection pump  
Pump designation : PES6P120A72ORS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV425...1100P2A534-8  
Governor no. : 0 421 833 370

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076 AN 030

1st version kW : 187.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X3.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 15.2...15.4

100 s: (15.0...15.6)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 2.5...2.9

100 s: (2.3...3.2)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 152.0...154.0

1000 : (150.0...156.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

#### Testing:

1st rack travel in: 11.00  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1225...1235  
3rd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.50...5.70

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 650  
Rack travel in m: 13.20...13.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 740  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 955  
Rack travel in m: 12.60...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 184.0...188.0  
1000 s: (182.0...190.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 118.0...122.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version:  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1150...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 25.5...29.5  
1000 s: (23.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE47394

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIN  
Edition : 27.03.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 744  
  
Injection pump  
Pump designation : PES6P120A720LS3298  
EP type number : 0 412 026 754  
Governor  
Governor design. : RSV350...1200POA553  
Governor no. : 0 421 833 371

Customer-spec. information  
Customer : FINCANTIERI

Engine : L 1306

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 105  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 10.00...11.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200  
Rack travel in mm : 15.20...15.30  
Del.quantity cm3/ : 27.5...27.7  
100 s: (27.2...28.0)  
Spread cm3 : 0.6  
100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 7.4...7.6  
Del.quantity cm3/ : 1.5...2.1  
100 s: (1.2...2.4)  
Spread cm3 : 1.0  
100 s: (1.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 1300  
Del.quantity : 275.0...277.0  
1000 : (272.0...280.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 100...108

Testing:  
1st rack travel in: 14.20  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
3rd rack travel in: 4.00



Speed rpm : 1470...1530  
4th rack travel in: 1650  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.0  
Speed rpm : 350  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 670...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 15.20...15.30  
2nd speed rpm : 500  
Rack travel in m: 15.20...15.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1300  
Rack travel mm : 15.20...15.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 900  
Rack travel in m: 14.60...14.70  
3rd pressure hPa : 500  
Rack travel in m: 12.70...12.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1300  
Speed rpm : 600  
Del.quantity cm3/ : 286.0...292.0  
1000 s: (283.0...295.0)  
Spread cm3 : 10.00  
1000 s: (14.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 155.0...157.0  
1000 s: (152.0...160.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.20  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 400.0...420.0  
1000 s: (396.0...424.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

Test electrically-released starting  
quantity (EES) with 12 volts

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
 Edition : 13.03.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 746  
 Injection pump  
 Pump designation : PES6P120A720RS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV625...1100P2A534-10  
 Governor no. : 0 421 833 373

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076 AZ 030

1st version kW : 184.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X3.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke nm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 15.3...15.5  
 100 s: (15.1...15.7)

Spread cm3 : 0.4  
 100 s: (0.6)

2nd speed rpm : 625.0  
 Rack travel in mm : 5.4...5.6  
 Del.quantity cm3/ : 2.7...3.1  
 100 s: (2.5...3.3)  
 Spread cm3 : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200  
 Del.quantity : 153.0...155.0  
 1000 : (151.0...157.0)  
 Spread cm3 : 4.00  
 1000 : (6.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:

1st rack travel in: 11.00  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
3rd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 24...31  
Setting point w/out bumper spring  
Speed rpm : 625  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 625  
Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 700  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 700  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 915  
Rack travel in m: 12.70...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 187.0...191.0  
1000 s: (185.0...193.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 119.5...123.5  
1000 s: (117.5...125.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 27.0...31.0  
1000 s: (25.0...33.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47398

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 31,8 e  
 Edition : 13.03.92  
 Replaces : 01.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 630 804  
 Injection pump  
 Pump designation : PE12P12DA12ORS7193  
 EP type number : 0 412 620 820  
 Governor  
 Governor design. : RGV275...1000PA938  
 Governor no. : 0 421 813 822

Customer-spec. information  
 Customer : BAUDOUIN

Engine : V12P15-2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 419 992 198  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-  
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 13.50...13.60  
 Del.quantity cm<sup>3</sup>/ : 37.9...38.1  
 100 s: (37.6...38.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 275.0  
 Rack travel in mm : 5.8...6.2  
 Del.quantity cm<sup>3</sup>/ : 2.7...3.3  
 100 s: (2.4...3.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 0.60...1.00  
 2nd speed rpm : 450  
 travel mm : 3.00...3.40  
 3rd speed rpm : 700  
 travel mm : 5.00...5.40  
 4th speed rpm : 1000  
 travel mm : 7.60...7.80  
 5th speed rpm : 1300  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1140  
 Rack travel in mm : 11.20...13.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 900

Del.quantity : 379.0...381.0  
1000 : (376.0...384.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 275  
Rack travel in mm : 5.90...6.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.00...12.10  
2nd pressure hPa : 600  
Rack travel in m: 13.10...13.20  
3rd pressure hPa : 300  
Rack travel in m: 12.40...12.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 324.0...330.0  
1000 s: (321.0...333.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1040...1050

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.80...6.20  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (24.0...36.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 31,8 c3  
Edition : 03.04.92  
Replaces : 05.90  
Test oil : ISO-4113  
Combination no. : 0 402 650 205  
Injection pump  
Pump designation : PE12P120A120RS7106  
EP type number : 0 412 620 800  
Governor  
Governor design. : RQV350...900PA935-1  
Governor no. : 0 421 813 820

Customer-spec. information  
Customer : BAUDOUIN

Engine : V12P15-2

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-  
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 4.6...5.0  
Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.40...1.60  
2nd speed rpm : 500  
travel mm : 3.10...3.70  
3rd speed rpm : 740  
travel mm : 5.70...6.30  
4th speed rpm : 960  
travel mm : 8.60...8.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1000  
Rack travel in mm : 9.70...12.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del. quantity : 339.0...341.0  
1000 : (336.0...344.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 118...126

### Testing:

1st rack travel in: 11.00  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 86...94

### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 350  
Rack travel in mm : 4.70...4.90

## CONSTANT REGULATION

Speed rpm : 330...450

## START CUT-OUT

Speed 1/min : 270 (290)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 940...950

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO  
Edition : 13.03.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 630 808  
Injection pump  
Pump designation : PE12P120A120RS7254  
EP type number : 0 412 620 832  
Governor  
Governor design. : RQV275...1000PA938  
Governor no. : 0 421 813 822

Customer-spec. information  
Customer : BAUDOUIN

Engine : V12 BTI

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 419 992 198  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8  
Test lines : 1 680 750 075  
Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00

N21

Firing order : 1- 12- 9- 4- 5- 8-  
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 13.50...13.60  
Del. quantity cm<sup>3</sup>/ : 37.9...38.1  
100 s: (37.6...38.4)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)  
2nd speed rpm : 275.0  
Rack travel in mm : 5.8...6.2  
Del. quantity cm<sup>3</sup>/ : 2.7...3.3  
100 s: (2.4...3.6)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 0.60...1.00  
2nd speed rpm : 450  
travel mm : 3.00...3.40  
3rd speed rpm : 700  
travel mm : 5.00...5.40  
4th speed rpm : 1000  
travel mm : 7.60...7.80  
5th speed rpm : 1300  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1140  
Rack travel in mm : 11.20...13.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 900



Del.quantity : 379.0...381.0  
1000 : (376.0...384.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 275  
Rack travel in mm : 5.90...6.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.00...12.10  
2nd pressure hPa : 600  
Rack travel in m: 13.10...13.20  
3rd pressure hPa : 300  
Rack travel in m: 12.40...12.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 324.0...330.0  
1000 s: (321.0...333.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1040...1050

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.80...6.20  
Del.quantity cm3/ : 27.0...33.0  
1000 s: (24.0...36.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
APPLICATION :

Navy

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO  
Edition : 27.03.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 630 809  
Injection pump  
Pump designation : PE12P120A120RS7253  
EP type number : 0 412 620 831  
Governor  
Governor design. : RQV400...750PA935  
Governor no. : 0 421 813 819

Customer-spec. information  
Customer : BAUDOUIN

Engine : V12P15-2

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00

N23

Firing order : 1- 12- 9- 4- 5- 8-  
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 41.9...42.1

100 s: (41.6...42.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.4...4.8

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.3

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 419.0...421.0

1000 : (416.0...424.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: ?

Testing:

1st rack travel in: 13.70

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 781...794

4th rack travel in: 900

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 4...12

Setting point w/out bumper spring

Speed rpm : 400  
Rack travel in mm : 4.6

Testing:

Speed rpm : 100  
Minimum rack travel: 6.10  
Speed rpm : 400  
Rack travel in mm : 4.50...4.70

START CUT-OUT

Speed 1/min : 340 (360)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.70  
Speed rpm : 750...755

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 b  
Edition : 27.03.92  
Replaces : 07.90  
Test oil : ISO-4113

Combination no. : 0 402 640 812

Injection pump  
Pump designation : PE12P120A520LS7820  
EP type number : 0 412 620 814  
Governor  
Governor design. : RGV350...1150PA870-4  
Governor no. : 0 421 813 717

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 19.00...21.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80

2nd speed rpm : 600  
travel mm : 3.30...3.80

3rd speed rpm : 960  
travel mm : 5.30...5.80

4th speed rpm : 1206  
travel mm : 7.90...8.40

5th speed rpm : 1291  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1150  
Aneroid pressure h: 1800  
Del.quantity : 312.0...314.0  
1000 : (309.0...317.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

### RATED SPEED

#### 1st version

Control lever  
position degrees: 113...121

#### Testing:

1st rack travel in: 13.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 62...70

#### Testing:

Speed rpm : 250  
Minimum rack travel: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

### CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 7.80...8.10

### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 1100  
Rack travel in m: 13.60...13.80

### START CUT-OUT

Speed 1/min : 310 (330)

### FUEL DELIVERY CHARACTERISTICS

N26

### 1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 303.0...313.0  
1000 s: (300.0...316.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (15.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 124.0...126.0  
1000 s: (121.0...129.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (15.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1190...1200

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 c  
Edition : 27.03.92  
Replaces : 10.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 640 817  
  
Injection pump  
Pump designation : PE12P120A520LS7826  
EP type number : 0 412 620 817  
Governor  
Governor design. : RQV350...1150PA870-4  
Governor no. : 0 421 813 717

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 19.00...21.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0  
Rack travel in mm : 5.3...5.9  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80  
2nd speed rpm : 600  
travel mm : 3.30...3.80  
3rd speed rpm : 960  
travel mm : 5.30...5.80  
4th speed rpm : 1206  
travel mm : 7.90...8.40  
5th speed rpm : 1291  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1275  
Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1150  
 Aneroid pressure h: 1800  
 Del.quantity : 312.0...314.0  
     1000 : (309.0...317.0)  
 Spread cm<sup>3</sup> : 6.00  
     1000 : (10.00)

## RATED SPEED

## 1st version

Control lever  
 position degrees: 113...121

## Testing:

1st rack travel in: 14.20  
     Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
     Speed rpm : 1270...1300  
 4th rack travel in: 1350  
     Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
 position degrees: 62...70

## Testing:

Speed rpm : 250  
 Minimum rack travel: 7.30  
 Speed rpm : 350  
 Rack travel in mm : 5.30...5.90

## CONSTANT REGULATION

Speed rpm : 350...600

## Aneroid/Altitude

### Compensator Test

## 1st version

Setting  
 Speed rpm : 500  
 Pressure hPa : -  
 Rack travel mm : 8.20...8.50

## Measurement

Speed 1/min : 500

1st pressure hPa : 300  
     Rack travel in m: 9.80...9.90  
 2nd pressure hPa : 1100  
     Rack travel in m: 14.00...14.20

## START CUT-OUT

Speed 1/min : 310 (330)

## FUEL DELIVERY CHARACTERISTICS

N28

## 1st version

Aneroid pressure h: 1800  
 Speed rpm : 750  
 Del.quantity cm<sup>3</sup>/ : 303.0...313.0  
     1000 s: (300.0...316.0)  
 Spread cm<sup>3</sup> : 10.00  
     1000 s: (15.0)  
 Aneroid pressure h: 1800  
 Speed rpm : 1150  
 Del.quantity cm<sup>3</sup>/ : 240.0...243.0 \*  
     1000 s: (237.0...246.0)  
 Spread cm<sup>3</sup> : 10.00  
     1000 s: (15.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm<sup>3</sup>/ : 124.0...126.0  
     1000 s: (121.0...129.0)  
 Spread cm<sup>3</sup> : 10.00  
     1000 s: (15.0)

## BREAKAWAY

## 1st version:

1mm rack travel less than

full load rack tr: 14.20  
 Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm<sup>3</sup>/ : 330.0...350.0  
     1000 s: (326.0...354.0)

Remarks:

:

\* = Set at reduced-delivery stop.